PHILIPS

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MODEL

SERVICE MANUAL

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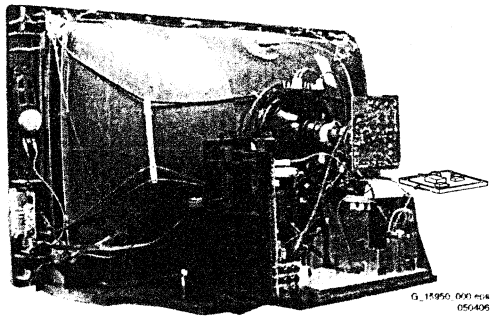

ServiceManual

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PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:
1.1 Technical Specifications
1.2 Connection Overview
1.3 Chassis Overview

Note: Data below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	:	CRT, DV, RF
Screen size	:	29" (72 cm), 4:3
	:	32" (82 cm), 16:9
Tuning system	:	PLL
TV Colour systems	:	PAL B/G, D/K, I
	:	SECAM B/G, D/K, L/L'
Video playback	:	NTSC M/N 3.58, 4.43
	:	PAL B/G
	:	SECAM L/L'
Presets/channels	:	100 presets
Supported video formats	:	640x480i - 1fH
	:	720x576i - 1fH
	:	640x480p - 2fH
	:	720x576p - 2fH
	:	1920x1080i - 2fH
	:	1280x720p - 3fH
Tuner bands	:	VHF
	:	UHF
	:	S-band
	:	Hyper-band

1.1.2 Sound

Sound systems	:	FM-mono
	:	AM-mono
	:	FM-stereo B/G
	:	NICAM B/G, D/K, I, L
	:	AV Stereo
Maximum power (W_{RMS})	:	2 x 10

1.1.3 Miscellaneous

Power supply:		
- Mains voltage (V_{AC})	:	220 - 240
- Mains frequency (Hz)	:	50 / 60
Ambient conditions:		
- Temperature range (°C)	:	-5 to +40
- Maximum humidity	:	95% R.H.
Power consumption		
- Normal operation (W)	:	≈ 110 (29")
	:	≈ 115 (32")
- Stand-by (W)	:	< 1
Dimensions (WxHxD cm)	:	74.0x58.3x48.4 (29")
	:	86.2x55.4x52.8 (32")
Weight (kg)	:	44 (29")
	:	50 (32")

1.2 Connection Overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Front / Side Control

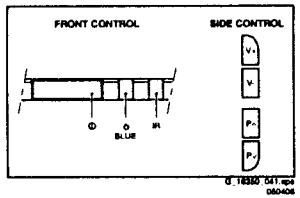


Figure 1-1 Front / side control

1.2.2 Rear / Side Connections

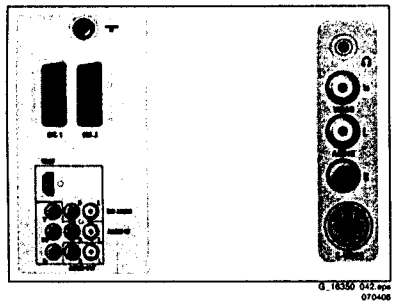


Figure 1-2 Rear and side connections

Aerial - In

-	- IEC-type (EU)	Coax, 75 ohm

Cinch: Video CVBS - In, Audio - In

Ye	- Video CVBS	1 V_{PP} / 75 ohm
Wh	- Audio L	0.5 V_{RMS} / 10 kohm
Rd	- Audio R	0.5 V_{RMS} / 10 kohm

SVHS (Hosiden): Video Y/C - In

1	- Ground Y	Gnd
2	- Ground C	Gnd
3	- Video Y	1 V_{PP} / 75 ohm
4	- Video C	0.3 V_{PP}P / 75 ohm

Mini Jack: Audio Headphone - Out

Bk	- Head phone	32 - 600 ohm / 10 mW

Service Connector (For I&P Tool)

1	- SDA-S	I^2C Data (0 - 5 V)
2	- SCL-S	I^2C Clock (0 - 5 V)
3	- Ground	Gnd

EXT1: Video RGB - In, CVBS - In/Out, Audio - In/Out

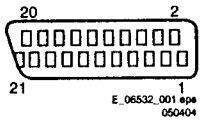


Figure 1-3 SCART connector

1	- Audio R	0.5 V_{RMS} / 1 kohm	
2	- Audio R	0.5 V_{RMS} / 10 kohm	
3	- Audio L	0.5 V_{RMS} / 1 kohm	
4	- Ground Audio	Gnd	
5	- Ground Blue	Gnd	
6	- Audio L	0.5 V_{RMS} / 10 kohm	
7	- Video Blue/U	0.7 V_{PP} / 75 ohm	
8	- Function Select	0 - 2 V: INT	
		4.5 - 7 V: EXT 16:9	
		9.5 - 12 V: EXT 4:3	
9	- Ground Green	Gnd	
10	- n.c.		
11	- Video Green/Y	0.7 V_{PP} / 75 ohm	
12	- n.c.		
13	- Ground Red	Gnd	
14	- Ground FBL	Gnd	
15	- Video Red/V	0.7 V_{PP} / 75 ohm	
16	- Status/FBL	0 - 0.4 V: INT	
		1 - 3 V: EXT / 75 ohm	
17	- Ground Video	Gnd	
18	- Ground Video	Gnd	
19	- Video CVBS	1 V_{PP} / 75 ohm	
20	- Video CVBS	1 V_{PP} / 75 ohm	
21	- Shield	Gnd	

EXT2: Video YC - In, CVBS - In/Out, Audio - In/Out

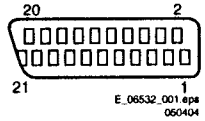


Figure 1-4 SCART connector

1	- Audio R	0.5 V_{RMS} / 1 kohm	
2	- Audio R	0.5 V_{RMS} / 10 kohm	
3	- Audio L	0.5 V_{RMS} / 1 kohm	
4	- Ground Audio	Gnd	
5	- Ground Blue	Gnd	
6	- Audio L	0.5 V_{RMS} / 10 kohm	
7	- C-FRONT	0.7 V_{PP} / 75 ohm	
8	- Function Select	0 - 2 V: INT	
		4.5 - 7 V: EXT 16:9	
		9.5 - 12 V: EXT 4:3	
9	- Ground Green	Gnd	
10	- Easylink P50	0 - 5 V / 4.7 kohm	
11	- n.c.		
12	- n.c.		
13	- Ground Red	Gnd	
14	- Ground Data	Gnd	
15	- C	0.7 V_{PP} / 75 ohm	
16	- n.c.		
17	- Ground Video	Gnd	
18	- Ground FBL	Gnd	
19	- Video CVBS	1 V_{PP} / 75 ohm	
20	- Video CVBS/Y	1 V_{PP} / 75 ohm	
21	- Shield	Gnd	

HDMI: Digital Video, Digital Audio - In

Figure 1-5 HDMI (type A) connector

1 - D2+	Data channel	
2 - Shield	Gnd	
3 - D2-	Data channel	
4 - D1+	Data channel	
5 - Shield	Gnd	
6 - D1-	Data channel	
7 - D0+	Data channel	
8 - Shield	Gnd	
9 - D0-	Data channel	
10 - CLK+	Data channel	
11 - Shield	Gnd	
12 - CLK-	Data channel	
13 - n.c.		
14 - n.c.		
15 - DDC_SCL	DDC clock	
16 - DDC_SDA	DDC data	
17 - Ground	Gnd	
18 - +5V		
19 - HPD	Hot Plug Detect	
20 - Ground	Gnd	

Cinch: Video YPbPr - In

Gn	- Video Y	1 V_{PP} / 75 ohm
Bu	- Video Pb	0.7 V_{PP} / 75 ohm
Rd	- Video Pr	0.7 V_{PP} / 75 ohm

Cinch: DVI Audio - In

Rd	- Audio - R	0.5 V_{RMS} / 10 kohm
Wh	- Audio - L	0.5 V_{RMS} / 10 kohm

Cinch: HDVCVI Audio - In

Rd	- Audio - R	0.5 V_{RMS} / 10 kohm
Wh	- Audio - L	0.5 V_{RMS} / 10 kohm

Cinch: Audio - Out

Rd	- Audio - R	0.5 V_{RMS} / 10 kohm
Wh	- Audio - L	0.5 V_{RMS} / 10 kohm

1.3 Chassis Overview

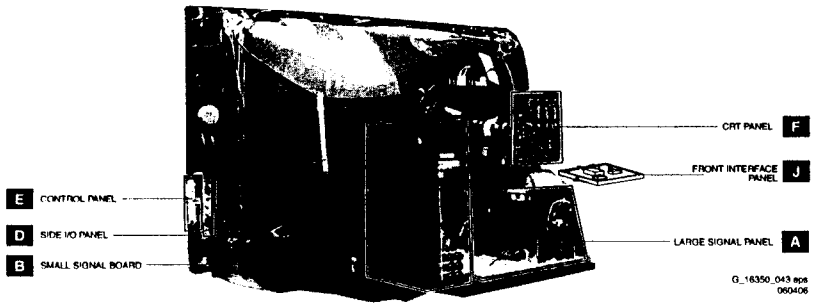


Figure 1-6 PWB location

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions
2.2 Maintenance Instructions
2.3 Warnings
2.4 Notes

2.1 Safety Instructions

Safety regulations require the following during a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ▲, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- Wear safety goggles when you replace the CRT.

Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current flows. In particular this is valid for the:
  1. Pins of the line output transformer (LOT).
  2. Fly-back capacitor(s).
  3. S-correction capacitor(s).
  4. Line output transistor.
  5. Pins of the connector with wires to the deflection coil.
  6. Other components through which the deflection current flows.

Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections, and is therefore only necessary for television sets more than two years old.

- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the "on" position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 Mohm and 12 Mohm.
  4. Switch "off" the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

2.2 Maintenance Instructions

We recommend a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When a customer uses the set under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When a customer uses the set in an environment with higher dust, grease, or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:
  1. Perform the "general repair instruction" noted above.
  2. Clean the power supply and deflection circuitry on the chassis.
  3. Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in figure "Discharge picture tube", to discharge the picture tube. Use a high voltage probe and a multi-meter (position V_{DC}). Discharge until the meter reading is 0 V (after approx. 30 s).

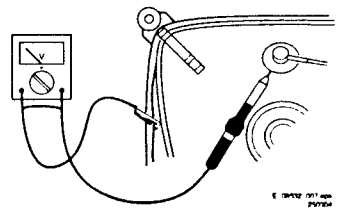


Figure 2-1 Discharge picture tube

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
  - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  - Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and prevents circuits from becoming unstable.

2.4 Notes

2.4.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏦), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊓) and without (⊀) aerial signal. Measure the voltages in the power supply section both in normal operation (Ⓘ) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the

semiconductors in the unit, irrespective of the type indication on these semiconductors.

- Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic" and the "double-D symbol", are trademarks of Dolby Laboratories.

2.4.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads (μ= x10^{-6}), nano-farads (n= x10^{-9}), or pico-farads (p= x10^{-12}).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.4.3 Rework on BGA (Ball Grid Array) ICs

General

Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device Removal

As is the case with any component that is being removed, it is essential when removing an (LF)BGA, that the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the risk of warping the PWB. To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area Preparation

When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA.
Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent.
After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA.
Note: Do not apply solder paste, as this has been shown to result in problems during re-soldering.

Device Replacement

The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

More Information

For more information on how to handle BGA devices, visit this URL: *www.atyourservice.ce.philips.com* (needs subscription, not available for all regions). After login, select "Magazine", then go to "Repair downloads". Here you will find Information on how to deal with BGA-ICs.

2.4.4 Lead-free Solder

Philips CE is producing lead-free sets (PBF) from 1.1.2005 onwards.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 5 and 6 refer to the production year, digits 7 and 8 refer to production week (in example below it is 1991 week 18).

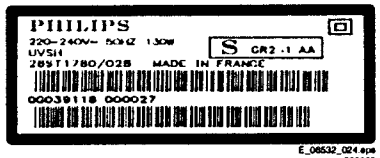


Figure 2-2 Serial number example

Regardless of the special lead-free logo (which is not always indicated), one must treat all sets from this date onwards according to the rules as described below.

Figure 2-3 Lead-free logo

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  - To reach a solder-tip temperature of at least 400°C.
  - To stabilise the adjusted temperature at the solder-tip.
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilised at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch "off" unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to avoid mixed regimes. If this cannot be avoided, carefully clean the solder-joint from old tin and re-solder with new tin.
- Use only original spare-parts listed in the Service-Manuals. Not listed standard material (commodities) has to be purchased at external companies.
- Special information for lead-free BGA ICs: these ICs will be delivered in so-called "dry-packaging" to protect the IC against moisture. This packaging may only be opened shortly before it is used (soldered). Otherwise the body of the IC gets "wet" inside and during the heating time the structure of the IC will be destroyed due to high (steam-) pressure inside the body. If the packaging was opened before usage, the IC has to be heated up for some hours (around 90°C) for drying (think of ESD-protection!).
  Do not re-use BGAs at all!

- For sets produced before 1.1.2005, containing leaded soldering tin and components, all needed spare parts will be available till the end of the service period. For the repair of such sets nothing changes.

In case of doubt whether the board is lead-free or not (or with mixed technologies), you can use the following method:

- Always use the highest temperature to solder, when using SAC305 (see also instructions below).
- De-solder thoroughly (clean solder joints to avoid mix of two alloys).

Caution: For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the "Magazine", chapter "Repair downloads".
For additional questions please contact your local repair help desk.

2.4.5 Alternative BOM Identification

In September 2003, Philips CE introduced a change in the way the serial number (or production number, see Figure 2-2) is composed. From this date on, the **third digit** in the serial number (example: AG2B0335000001) indicates the number of the alternative BOM (Bill of Materials used for producing the specific model of TV set). It is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different O.E.M.s.
By looking at the third digit of the serial number, the service technician can see if there is more than one type of B.O.M. used in the production of the TV set he is working with. He can then consult the At Your Service Web site, where he can type in the Commercial Type Version Number of the TV set (e.g. 29PT9521/12), after which a screen will appear that gives information about the number of alternative B.O.M.s used.
If the third digit of the serial number contains the number 1 (example: AG1B033500001), then there is only one B.O.M. version of the TV set on the market. If the third digit is a 2 (example: AG2B0335000001), then there are two different B.O.M.s. ***Information about this is important for ordering the correct spare parts!***
For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26 = 35 different B.O.M.s can be indicated by the third digit of the serial number.

2.4.6 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:

http://www.philips.com/support
http://www.p4c.philips.com

4. Mechanical Instructions

Index of this chapter:

4.1 Service Connector (for IAP)
4.2 Set Disassembly
4.3 Service Positions
4.4 Assy / Board Removal
4.5 Set Re-assembly

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Service Connector (for IAP)

For software uploading with the IAP tool (In Application Programming), it is not necessary to remove EEPROMs from the set. You only have to connect the IAP interface circuit to the service connector (on the rear of the set, and start the software uploading (see also chapter 5 "Service Modes, Error Codes, and Fault Finding").

4.2 Set Disassembly

Follow the disassemble instructions in described order.

4.2.1 Rear Cover Removal

Warning: disconnect the mains power cord before you remove the rear cover.

1. Remove all the fixation screws of the rear cover.
2. Now the rear cover can be removed.

4.3 Service Positions

Only the LSP of this chassis has a service position for better access to the component side of the LSP. For the SSB, there is no specific service position.

4.3.1 Large Signal Panel (LSP)

Component Side LSP

For better accessibility of the LSP, do the following (see Figures "Service position LSP" and "Locking handles LSP"):

1. Simultanuously do the following: a) pull the two plastic locking handles at the mid left and mid right side of the bracket gently backwards to unlock the bracket, and b) loosen the bracket from the bottom tray, by pulling it backwards. N.B.: You do not need to pull the other two locking handles backwards.
2. Remove the LSP-bracket from the bottom tray by lifting it upwards.
3. Hook the bracket in the first row of fixation holes of the bottom tray. In other words, reposition the bracket from [1] to [2].

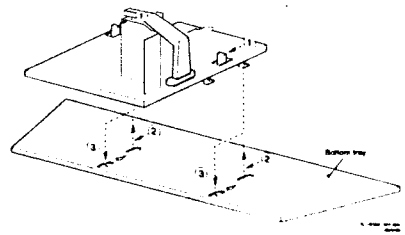


Figure 4-1 Service position LSP

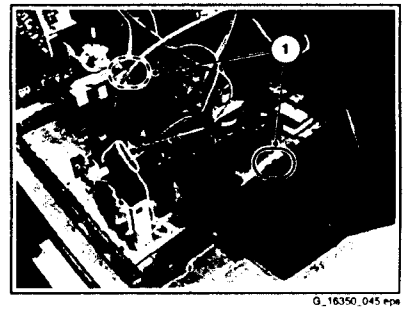


Figure 4-2 Locking handles LSP

Solder Side LSP

To get access to the bottom side (solder side) of the LSP, do the following:

1. Remove all the connectors from the LSP.
2. Remove the LSP, still in its plastic bracket, from the chassis, so the bottom side of the LSP can be reached. If necessary, remove the LSP also from its plastic bracket

4.3.2 Small Signal Board (SSB)

There is no service position for the SSB. Most test points are located on the component side. If you have to replace ICs, you must remove the complete SSB module from the TV set (see further down in this chapter: Small Signal Board, SSB).

4.4 Assy / Board Removal

Sometimes, it can be necessary to swap a complete assy or Printed Wiring Board (PWB). How that can be done is explained below.

4.4.1 Top Control & Side I/O Assy/Panel

Figure 4-3 Top control & Side I/O assy/panel

1. Remove the two fixation screws that hold the panel (see Figure "Top control & Side I/O assy/panel").
2. Pull the board backwards and remove it from the TV set.
3. Remove, if necessary, all the connectors from the board.

4.4.2 Mains Switch/LED Panel

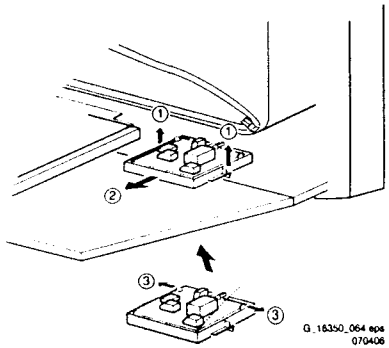


Figure 4-4 Mains Switch / LED panel

1. Release the two fixation clamps [1] by pushing them backwards and upwards (see Figures above).
2. Pull the complete assy backwards [2].
3. If the board has to be removed, release the two clamps at the sides of the bracket and lift the panel out [3].

4.4.3 Small Signal Board (SSB)

Figure 4-5 SSB removal from chassis

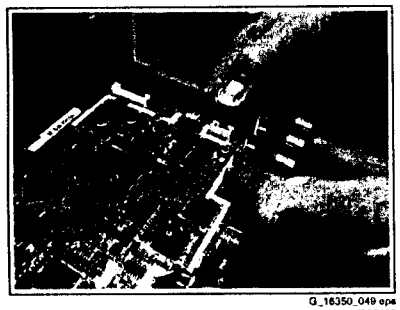


Figure 4-6 SSB removal from bracket

1. Release the fixation clamp (see Figure "SSB removal from chassis") by pushing it backwards.
2. Take the complete SSB out.
3. If the board has to be removed, release the two clamps at the sides of the bracket and lift the panel out (see Figure "SSB removal from bracket").

4.4.4 Large Signal Panel (LSP)

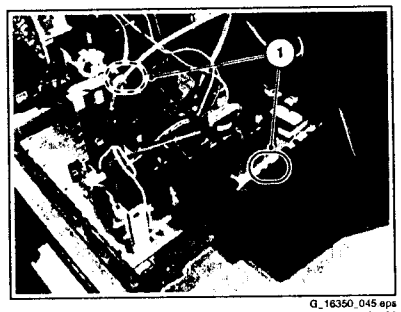


Figure 4-7 LSP locking handles

1. Simultanuously do the following:
   a. Pull the two plastic locking handles at the mid left and mid right side of the bracket gently backwards to unlock the bracket (see Figure "LSP locking handles"), and
   b. Loosen the bracket from the bottom tray, by pulling it backwards.
   N.B.: You do not need to pull the other two locking handles backwards.
2. Remove the LSP-bracket from the bottom tray by lifting it upwards.
3. Remove all cables from the LSP.
4. Remove the board from the bracket by unhooking it from its fixation clamps.

4.5 Set Re-assembly

To re-assemble the whole set, do all processes in reverse order.
Be sure that, before the rear cover is mounted:

- The mains cord is postioned correctly in its guiding brackets (make sure that the strain relief will function correctly!).
- All wires/cables are returned in their original positions. This is very important, in view of the "hot" and "EHT" areas of the set.
- Check if **no wires are touching the heat sinks** that are on the LSP; this may dammage the cables!

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Test Points
5.2 Service Modes
5.3 Problems and Solving Tips Related to CSM
5.4 Service Tools
5.5 Error Codes
5.6 The Blinking LED Procedure
5.7 Software Downloading
5.8 Fault Finding and Repair Tips

5.1 Test Points

This chassis is equipped with test points in the service printing. In the schematics, test points are identified with a rectangle box around Fxxx or Ixxx. These test points are specifically mentioned in the service manual as "ball moons" with a dot in the centre.

The chassis is equipped with test points (Fxxx) printed on the circuit board assemblies. As most signals are digital, it will be almost impossible to measure waveforms with a standard oscilloscope. Therefore, waveforms are not given in this manual.

Perform measurements under the following conditions:
- Television set in Service Default Alignment Mode.
- Video input: Colour bar signal.
- Audio input: 3 kHz left channel, 1 kHz right channel.

5.2 Service Modes

Service Default mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) and the Digital Customer Service Mode (DCSM, only for TVs with digital reception module) are used for communication between the call centre and the customer.

This chassis offers the option of using the IAP Tool (In Application Programming), a hardware interface between a computer and the TV chassis, for software uploading to the TV set. See also paragraph "Service Tools: IAP Tool").

5.2.1 Service Default Mode (SDM)

Purpose
- To create a predefined setting for measurements to be made.
- To override software protections.
- To start the "Blinking LED Procedure".
- To inspect the error buffer.
- To check the life timer.

Specifications

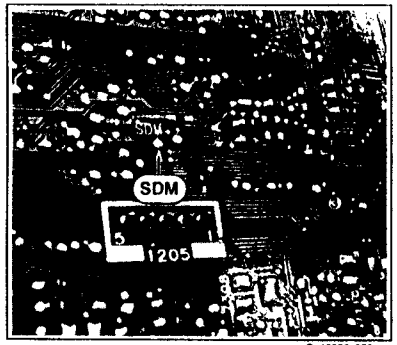
Table 5-1 SDM default settings

Region	Freq. (MHz)	Default system
Europe, AP-PAL/Multi	475.25	PAL B/G
NAFTA, AP-NTSC, LATAM	61.25 (ch. 3)	NTSC M

- All picture settings at 50% (brightness, colour contrast, ...).
- Bass, treble and balance at 50%, volume at 25%.
- All service-unfriendly modes (if present) are disabled. The service unfriendly modes are:
  - *Timer / Sleep timer.*
  - Child / parental lock.
  - Blue mute.
  - Hotel / hospital mode.
  - Auto shut off (when no "IDENT" video signal is received for 15 minutes).
  - Skipping of non-favourite presets / channels.
  - Auto-storage of personal presets.
  - Auto user menu time-out.
  - Auto Volume Levelling (AVL).

How to Enter

To enter SDM, use one of the following methods:
- Press the following key sequence on the remote control transmitter: "**062596**" directly followed by the MENU button (do not allow the OSD display to time out between entries while keying the sequence).
- Short the SDM contact to mass (see Figure "SDM Service contact") on the TV board and apply AC Power. Remove the short after start-up.
  Caution: Entering SDM by shorting the "Service" contact to mass will override the software protections. Do this only for a short period. **When doing this, the service-technician must know exactly what he is doing, as it could damage the television set.**



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060406

Figure 5-1 SDM Service contact (for SDM: short to mass)

After entering SDM, the following screen is visible, with SDM in the upper right corner of the screen to indicate that the television is in Service Default Mode.

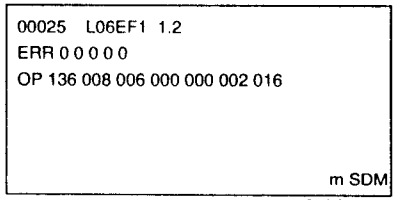

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Figure 5-2 SDM menu (example)

How to Navigate

When you press the MENU button on the remote control, the set will switch on the normal user menu in the SDM mode.

How to Exit

Switch the set to STANDBY by pressing the POWER button on the remote control transmitter.
If you turn the television set off by removing the mains (i.e., unplugging the television) or by using the POWER button on the TV set, the television set will remain in SDM when mains is re-applied, and the error buffer is not cleared.

5.2.2 Service Alignment Mode (SAM)

Purpose
- To change option settings.
- To display / clear the error code buffer.
- To perform alignments.

Specifications
- Operation hours counter (maximum five digits displayed).
- Software version, Error codes, and Option settings display.
- Error buffer clearing.
- Option settings.
- Software alignments (Tuner, RGB Align, Geometry, and Audio).
- NVM Editor.
- IAP Mode switching (Compair mode not implemented).

How to Enter

Press the following key sequence on the remote control transmitter: "**062596**" directly followed by the OSD/STATUS/INFO button (do not allow the OSD display to time out between entries while keying the sequence).

After entering SAM, the following screen is visible, with SAM in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.

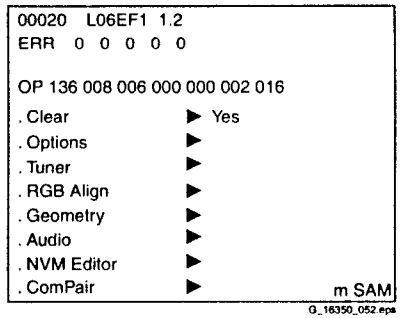

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Figure 5-3 SAM menu (example)

Menu Explanation

1. **LLLLL.** This represents the run timer. The run timer counts normal operation hours (including "on/off" switching), but does not count stand-by hours.
2. **AAA.BC-X.Y.** This is the software identification of the Main/Scaler microprocessor:
   - **AAA.B** = the chassis name.
   - **B** = the display indicator.
   - **C**= the region: E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM, G= Global.
   - **X**= the Main software version number (updated with a major change that is incompatible with previous versions).
   - **Y**= the sub software version number (updated with a minor change that is compatible with previous versions).
3. **Error Buffer (ERR).** Shows all errors detected since the last time the buffer was erased. Five errors possible.
4. **Option Bytes (OP).** Shows all option settings. See "Options" in the Alignments section for a detailed description. Seven codes are available.
5. **See Note below** (about other menu items)
6. **SAM.** Indication of the Service Alignment Mode.

Note: The other menu items (**Clear, Options, Tuner, RGB Align, Geometry, Audio, NVM Editor,** and **Compair**) are explained at the end of this chapter, together with the menu structure. See: "SAM Menu structure".

How to Navigate
- In SAM, select menu items with the CURSOR UP/DOWN keys on the remote control transmitter. The selected item will be highlighted. When not all menu items fit on the screen, use the CURSOR UP/DOWN keys to display the next / previous menu items.
- With the CURSOR LEFT/RIGHT keys, it is possible to:
  - Activate the selected menu item.
  - Change the value of the selected menu item.
  - Activate the selected submenu.
- In SAM, when you press the MENU button twice, the set will switch to the normal user menus (with the SAM mode still active in the background). To return to the SAM menu press the MENU button again.
- When you press the MENU key in while in a submenu, you will return to the previous menu.

How to store SAM settings

To store the settings changed in SAM mode, leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set.

How to exit

Switch the set to STANDBY by pressing the POWER button on the remote control transmitter or on the television set.

5.2.3 Customer Service Mode (CSM)

Purpose

The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.
The CSM is a read-only mode; therefore, modifications are not possible in this mode.

How to Enter

To enter CSM, press the following key sequence on the remote control transmitter: "**123654**" (do not allow the OSD display to time out between entries while keying the sequence).

Upon entering the Customer Service Mode, the following screen will appear:

```
1 00025  L06EF1 1.2
2 CODES 0  0  0  0  0
3 OP 136 008 006 000 000 002 016
4
5 CTN
6
7 PAL
8 DUAL I
9 CO 50 CL 50 BR 50 HU    0
0 AVL Off                 m CSM
```

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Figure 5-4 CSM menu (example)

Menu Explanation

1. Indication of the decimal value of the operation hours counter, Main/Scaler software version (see "Service Alignment Mode" for an explanation), and service mode (CSM= Customer Service Mode).
2. Displays the last five errors detected in the error code buffer.
3. Displays the option bytes
4. Reserved
5. Displays the type number version of the set (option).
6. Reserved.
7. Displays the detected Colour system (e.g. PAL/NTSC).
8. Displays the detected Audio (e.g. stereo/mono).
9. Displays the picture setting information.
10. Displays the sound setting information.

How to Exit

To exit CSM, use one of the following methods:

- Press the MENU, STATUS (or EXIT/INFO/[i+]), or POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.3 Problems and Solving Tips Related to CSM

5.3.1 Picture Problems

Note: The problems described below are all related to the TV settings. The procedures used to change the value (or status) of the different settings are described.

Picture Too Dark or Too Bright

If:

- The picture improves when you enter the Customer Service Mode.

Then:

1. Press the MENU button on the remote control transmitter. This brings up the normal user menu; the PICTURE sub menu is highlighted.
2. Press the CURSOR RIGHT key to enter the PICTURE sub menu.
3. Press the CURSOR UP/DOWN keys to increase or decrease the BRIGHTNESS value.
4. Press the MENU button on the remote control transmitter twice to exit the user menu.
5. The new PERSONAL preference values are automatically stored.

White Line(s) Around Picture Elements and Text

If:

There are white lines around picture elements and text,

Then:

1. Press the MENU button on the remote control transmitter. This brings up the normal user menu (PICTURE is highlighted).
2. Use the CURSOR DOWN key to select SHARPNESS.
3. Press the CURSOR RIGHT key to enter the SHARPNESS adjustment mode.
4. Press the CURSOR UP/DOWN keys to increase or decrease the SHARPNESS value.
5. Press the MENU button on the remote control transmitter twice to exit the user menu.
6. The new PERSONAL preference value is automatically stored.

Snowy Picture

Check the following:

- Antenna not connected. Connect the antenna.
- No antenna signal or bad antenna signal. Connect a proper antenna signal.
- The tuner is faulty (in this case line 2, the Error Buffer line, will contain error number 9). Check the tuner and replace/ repair the tuner if necessary.

Black and White Picture

If:

- The picture is (nearly) in black and white when it should be in colour.

Then:

1. Press the MENU button on the remote control transmitter. This brings up the normal user menu (PICTURE is highlighted).
2. Press the CURSOR RIGHT key to enter the PICTURE sub menu.
3. Use the CURSOR DOWN key to select COLOUR.
4. Press the CURSOR UP/DOWN keys to increase the COLOUR value.
5. Press the MENU button on the remote control transmitter twice to exit the user menu.
6. The new PERSONAL preference value is automatically stored.

5.4 Service Tools

5.4.1 IAP Tool: system requirements

PC

The PC used for IAP should meet the following criteria:

- Parallel Port;
- Windows XP Operating System;
- 60 MB free disk space.

5.4.2 IAP Tool: use

Introduction

The IAP Tool (In Application Programming) is a service tool for uploading software to a TV set (see Figure "IAP Interface"). In order to use IAP, the following items should be available:

- **PC**;
- **TV set**, to be put in the IAP mode (only when it is connected to the PC via the IAP interface);
- **IAP Interface,** (parallel to I^2C, for the connection between a PC and the TV set);
- **IAP Trident EXSDK software package,** software will be available via your national service organisation.

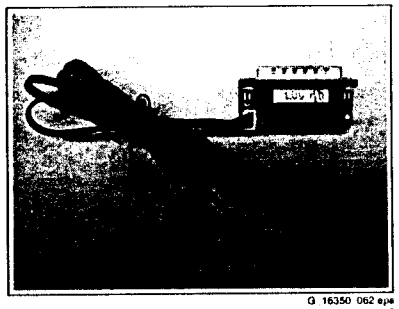

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Figure 5-5 IAP Interface

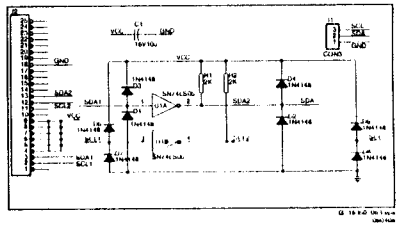


Figure 5-6 IAP interface circuit diagram

Installing the IAP software on a PC

When all the items mentioned above are present, install the software on a PC as follows:

- Extract the Trident EXSDK package (EXSDK.zip) into C:\Trident\Bin.
- The IAPWriter6.exe file is now inside the Bin folder.

Programming the Flash IC

The pre-requisite for flashing the software is that the Flash IC should have a bootloader (this means that there is already software on the TV set). To start the flashing, do as follows:

- Turn on the TV set, enter SAM mode > IAP. The TV is now in the IAP mode.
- Connect the PC to the TV via the Parallel-to-I^2C card (IAP Interface).
- Double-click on C:\Trident\Bin\IAPWriter6.exe in order to launch the IAP writer. The main interface will appear.
- Check that these parameters are set correctly:

DEVICE	STM29W400DT
MPU Start Address	080000
MPU End Address	0FBFFF
Buffer Start Address	000000
Buffer End Address	07FFFF

Note: The device depends on the Flash IC used.

- Select File > Load, and select the .bin file to be programmed to the Flash IC.
- Select File Type "Binary".
- Select "Write Device".

Note: If there are no errors reported, the programming is successful.
Note: Sometimes, an error message may appear. Please try a few times if this happens.

How to Order

Note: If you encounter any problems, contact your local support desk.

5.5 Error Codes

5.5.1 Introduction

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.
When an error has occurred, the error is added to the list of errors, provided the list is not full or the error is a protection error.
When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained), except when the error is a protection error.
To prevent that an occasional error stays in the list forever, the error is removed from the list after 50+ operation hours.
When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

5.5.2 How to Read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only if you have a picture). Examples:
  - **0 0 0 0**: No errors detected
  - **6 0 0 0**: Error code 6 is the last and only detected error
  - **9 6 0 0**: Error code 6 was first detected and error code 9 is the last detected error
- Via the blinking LED procedure (when you have no picture). See next paragraph.
- Via IAP.

5.5.3 How to Clear the Error Buffer

Use **one** of the following methods:

- By activation of the "CLEAR ERRORS" command in the SAM menu.
- With a normal RC, key in sequence "MUTE" followed by "**062599**" and "OK".
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

5.5.4 Error Codes

The function of error codes is to indicate failures in the TV set. In principle a unique error code is available for every:

- I^2C device error.
- I^2C bus error (for every bus containing two or more I^2C devices).
- Protection error (e.g. +8V protection or Horizontal protection).
- Error not related to an I^2C device, but of importance (e.g. BC-loop, RAM error).

Table 5-2 Error Table

Error	Description
0	0 = No error
2	High beam (BCI) protection
3	Vertical guard protection
4	POR bit / +8 V protection
7	Black current loop instability protection
8	General I^2C error Microprocessor (M30620FCNGP)
9	I^2C error while communicating with the PLL tuner (UV1316E)
10	I^2C error while communicating with the EEPROM (NVM at uP, M24C64)
11	I^2C error while communicating with the IF demodulator (TDA9886T/V4)
12	I^2C error while communicating with the Trident (SVPEX42)
13	I^2C error while communicating with the HOP (TDA9332H/N3)
14	I^2C error while communicating with the HDMI (SIL9011 CLU)
15	I^2C error while communicating with the Audio Demodulator (MSP3411G)
16	I^2C error while communicating with the ADC RGB (AD9985KST-110)
19	I^2C error while communicating with the SDRAM IC (K4D263238F)

Service Tips:

- In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present. Before clearing the buffer, write down the content, as this history can give you significant information.
- If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).

5.6 The Blinking LED Procedure

5.6.1 Introduction

Via this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful for fault finding, when there is no picture.

When the SDM is activated, the front LED will show (by blinking) the contents of the error-buffer. Error-codes > 10 are shown as follows:

1. A long blink of 750 ms (which is an indication of the decimal digit),
2. A pause of 1500 ms,
3. "n" short blinks (where "n" = 1 - 9),
4. When all the error-codes are displayed, the sequence finishes with a LED blink of 3000 ms,
5. The sequence starts again

Example: Error 12 9 6 0 0.
After activation of the SDM, the front LED will show:

1. 1 long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1500 ms,
2. 2 short blinks of 250 ms, followed by a pause of 3000 ms,
3. 9 short blinks of 250 ms, followed by a pause of 3000 ms,
4. 6 short blinks of 250 ms, followed by a pause of 3000 ms,
5. 1 long blink of 3000 ms to finish the sequence,
6. The sequence starts again.

5.6.2 How to Activate

Use one of the following methods:

- Activate the SDM (only by shorting the soldering pad indicated in Figure "SDM Service contact" on the first page of this chapter to mass). The blinking front LED will show the entire contents of the error buffer (this works in "normal operation" mode and in "protection" mode). In order to avoid confusion with RC5 signal reception blinking, this LED blinking procedure is terminated when an RC5 command is received.
- Transmit the commands "MUTE", "**06250x**", and "OK" with a normal RC (where "x" is the position in the error buffer that has to be displayed). With x= 1, the last detected error is shown, x= 2 the second last error, etc.... When x= 0, all errors are shown.
- "DIAGNOSE X" with the DST (where "x" is the position in the error buffer that has to be displayed). With x= 1, the last detected error is shown, x= 2 the second last error, etc.... When x= 0, all errors are shown.

Note: It can take some seconds before the blinking LED starts.

5.7 Software Downloading

In this chassis, you can **upgrade** the software via the IAP Tool (In Application Programming). You can find more information on this in the paragraph "Service Tools" in this chapter.

5.8 Fault Finding and Repair Tips

Notes:

- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

5.8.1 NVM Editor

In some cases, it can be handy if one directly can change the NVM contents. This can be done with the "NVM Editor" in SAM mode. In the next table, the default NVM values are given.

Table 5-3 NVM default values

Item	Address (dec)	Default values (hex)		Default values (dec)	
		28PT9521/12	32PW9551/12	28PT9521/12	32PW9551/12
EW (EW Width)	19	15	1A	21	26
PW (EW Parabola Width)	20	19	19	25	25
HS (Horizontal Shift)	21	20	20	32	32
HP (Horizontal Parallelogram)	22	07	07	07	07
HB (Horizontal Bow)	23	07	07	07	07
UCP (EW Upper Corner Parabola)	24	20	20	32	32
LCP (EW Lower Corner Parabola)	25	20	20	32	32
TC (EW Trapezium)	26	10	10	29	29
VS (Vertical Slope)	27	27	27	39	39
VA (Vertical Amplitude)	28	20	20	32	32
SC (S-Correction)	29	15	15	21	21
VSH (Vertical Shift)	30	20	20	32	32
VX (Vertical Zoom)	31	19	19	25	25
VSL (Vertical Scroll)	32	20	20	32	32
HOP EW EHT Compensation	33	20	20	32	32
BLOR (Black Level Offset - Red)	34	08	08	08	08
BLOG (Black Level Offset - Green)	35	08	08	08	08
AGC (AGC Takeover)	36	0E	0E	14	14
OIF (IF-PLL Offset)	37	20	20	32	32
AGC10	38	01	01	01	01
H60 (60 Hz Horizontal Shift)	39	00	00	00	00
60 Hz Vertical Amplitude	42	04	04	04	04
YD & CL	43	04	07	04	07
RGB Brightness	48	28	28	40	40
NVM_TABLE_VERSION	60	64	64	100	100
OPTION_TABLE_VERSION	61	3C	3C	60	60
TXT Brightness	64	14	14	20	20
V60 offset (60Hz Vertical Amplitude)	66	04	04	04	04
CRYSTALALIGN	208	00	00	00	00
VIDEO PP	264	23	23	35	35
Last Colour	265	36	36	54	54
Last Contrast	266	64	64	100	100
Last Sharpness	267	05	05	05	05
Last Hue	268	32	32	50	50
Last Colour Temp	269	00	00	00	00
White-D Cool Red	294	00	00	00	00
White-D Cool Green	295	00	00	00	00
White-D Cool Blue	296	04	04	04	04
White-D Normal Red	297	25	25	37	37
White-D Normal Green	298	20	20	32	32
White-D Normal Blue	299	28	28	40	40
White-D Warm Red	300	08	08	08	08
White-D Warm Green	301	00	00	00	00
White-D Warm Blue	302	ED	ED	237	237
Audio Last Smart	342	03	03	03	03
Last Volume	343	23	23	35	35
Last Balance	344	0A	0A	10	10
Last Treble	345	00	00	00	00
Last Bass	346	00	00	00	00

Note:

- When aligning a TV set, it is convenient to start with the default settings, and then to change them, if necessary, to customized values.
- If you suspect a defective TV set is programmed with the wrong settings or options, try to restore the set to its default settings or set the options to their virgin mode (the latter can also be done via the NVM Editor in the SAM menu, see chapter 8 and the table Option codes).
  If the remote control of a TV set is defective of missing, and you can not enter the CSM or SAM menu, it is always possible to return the TV to its virgin mode by simultaneously pressing the Volume+ and Volume- keys on the Top Control/Side I/O panel of the TV set.

5.8.2 SAM Menu Structure

The SAM Menu structure of the L06.1E AA is different from that of the ES1. Some of the menu items that were in the main menu of the ES1 are now in the submenu. The following table shows the structure of the SAM menu of the L06.1E AA.

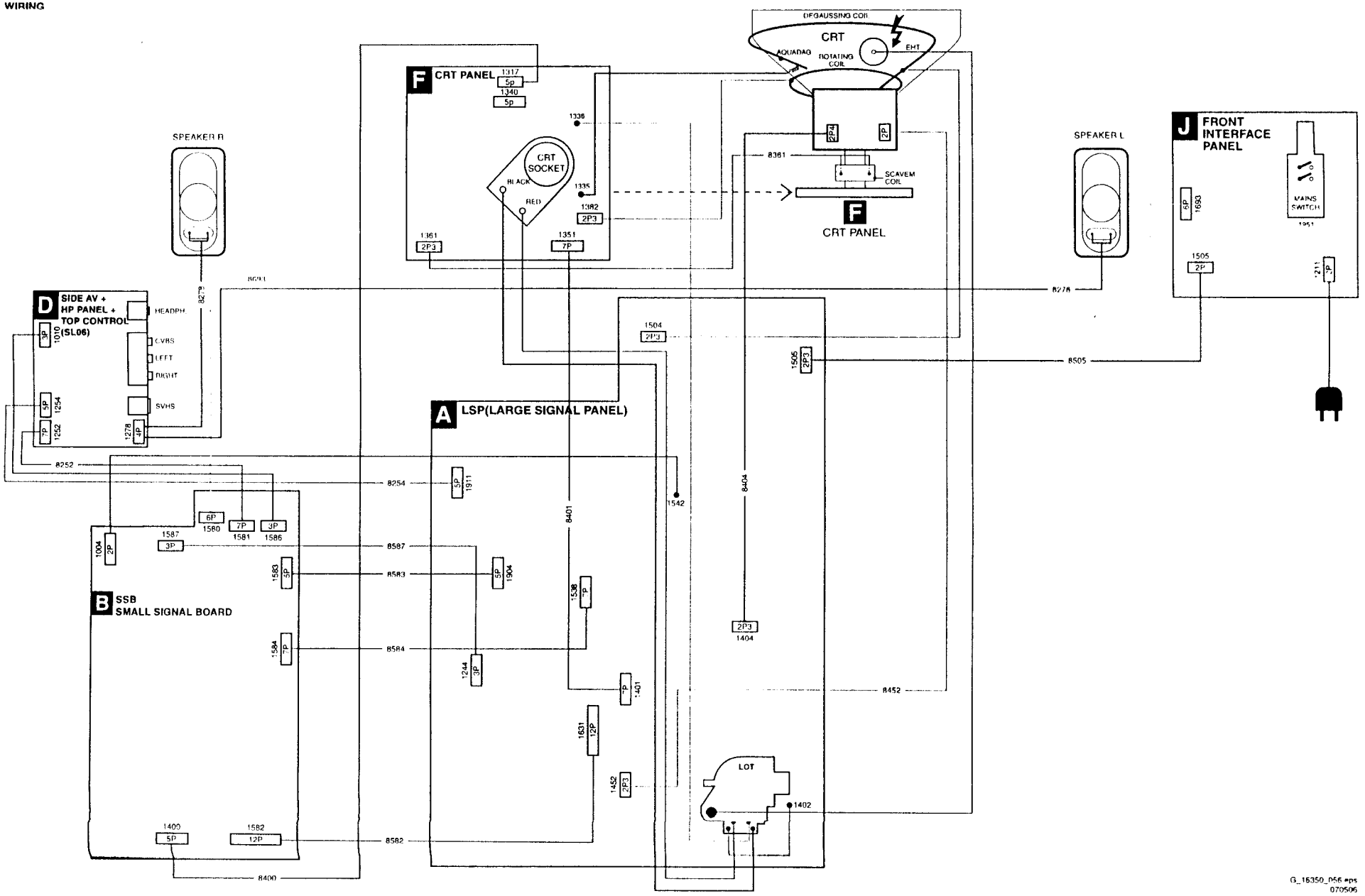
Table 5-4 SAM menu structure

SAM Main Menu	SAM Submenu level 1	SAM Submenu level 2	Example of SAM Submenu values / settings	Explanation of menu items
Clear			Yes	**Clear.** Erases the contents of the error buffer. Select the CLEAR menu item and press the CURSOR RIGHT key. The content of the error buffer is cleared
Options	OP1			**Options.** Used to set the option bits. See "Options" in the Alignments section for a detailed description.
	OP2			
	OP3			
	OP4			
	OP5			
	OP6			
	OP7			
Tuner	IFPLL			**Tuner.** Used to align the tuner. See "Tuner" in the Alignments section for a detailed description.
	AGC			
RGB Align	AKB		Off / On	**RGB Align > White Tone.** Used to align the white tone. See "RGB Align > White Tone" in the Alignments section for a detailed description.
	White Tone	Cool		
		Normal		
		Warm		
		BlackL Offset R		
		BlackL Offset G		
	CL		7	
Geometry	Horizontal	HP	8	**Geometry.** Used to align the Geometry. See "Geometry" in the Alignments section for a detailed description.
		HB	9	
		HSH	33	
		EWW	23	
		EWP	26	
		EWT	31	
		UCP	41	
		LCP	34	
	Vertical	SBL		**Note:** If the TV set is switched to 50 Hz/double lines (i.e. not Pixel Plus/100 Hz) only "VS" is shown in the menu.
		VS	42	
		VSH	26	
		VAM	25	
		VSC	21	
Audio	AF-M		250	**Audio.** No audio alignment is necessary for this television set.
	A2-T		400	
	AT		2	
NVM Editor	ADR		0x0001 1	**NVM Editor.** Can be used to change the NVM data in the television set.
	VAL		0x0000 0	
	Store			
Compair	Compair			**ComPair.** In other TV sets, this menu item can be used to switch the television to "In System Programming" (ISP) mode, for software uploading via ComPair. In the L06.1E AA, however, a different system is used. IAP. **Caution:** When this mode is selected without IAP connected, the TV will be blocked. Remove the AC power to reset the TV.
	IAP			**IAP.** This tool is used instead of Compair (Compair is not implemented in this TV set)

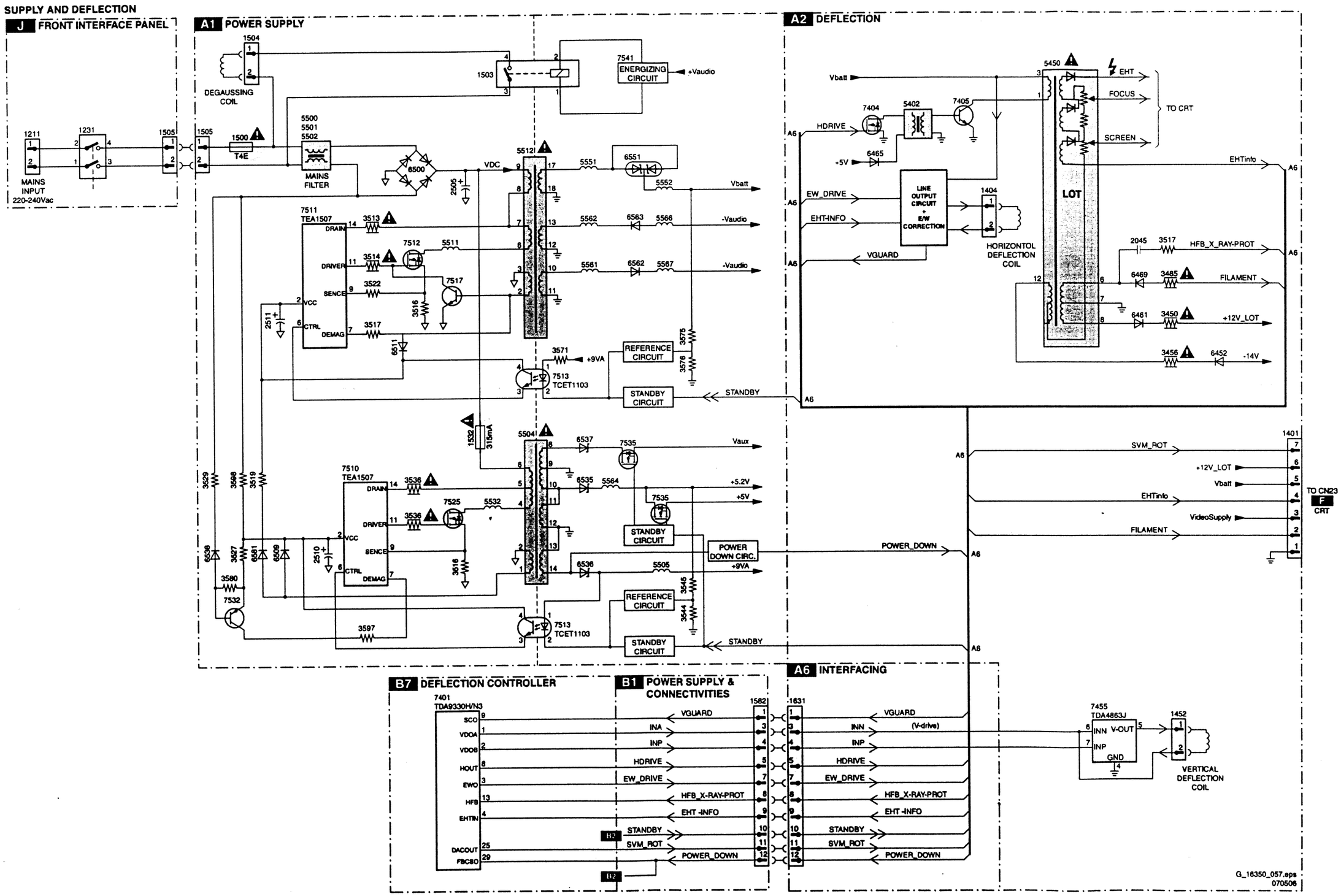
6. Block Diagrams, Testpoint Overviews, and Waveforms

Wiring Diagram

WIRING

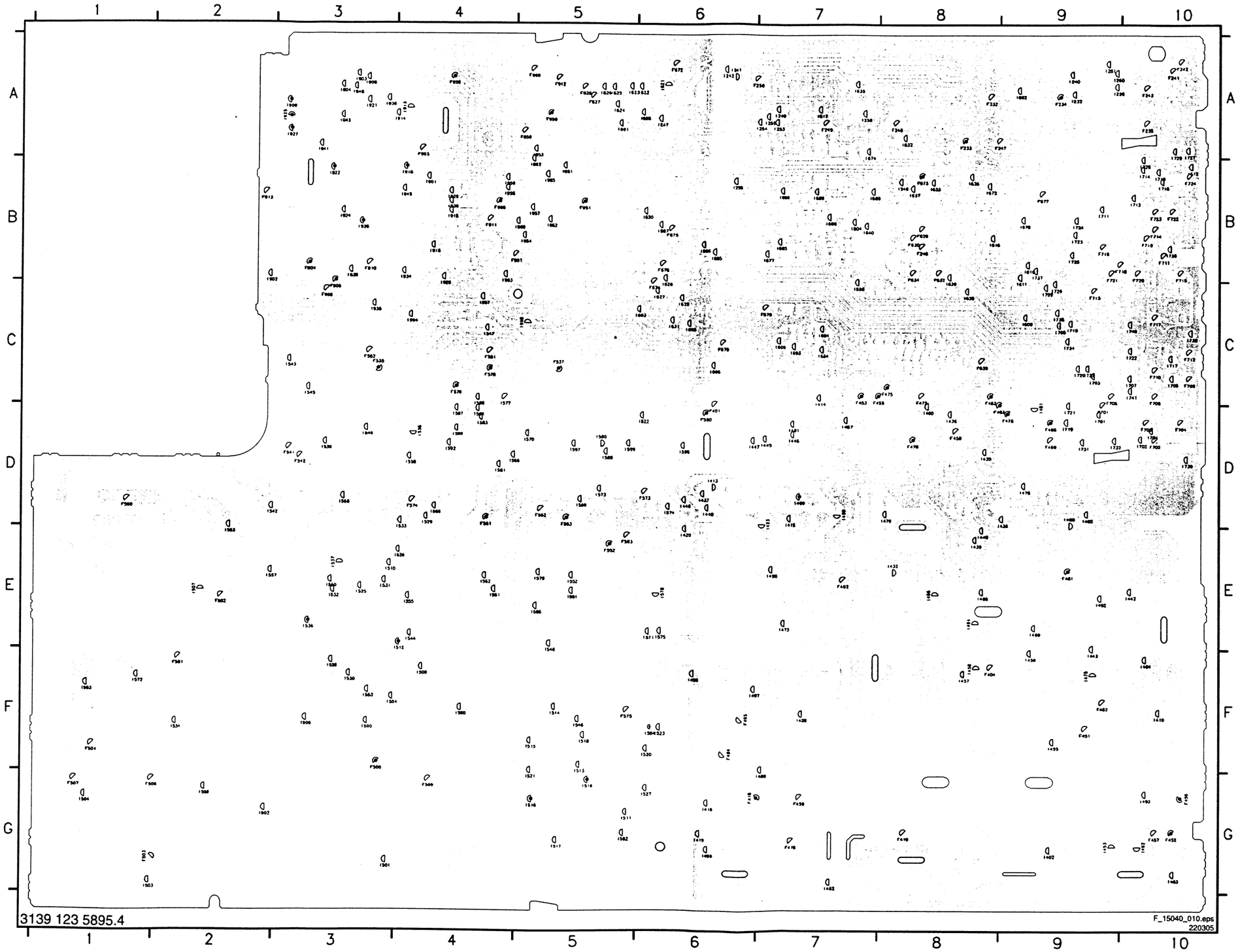


Block Diagram LSP Supply and Deflection

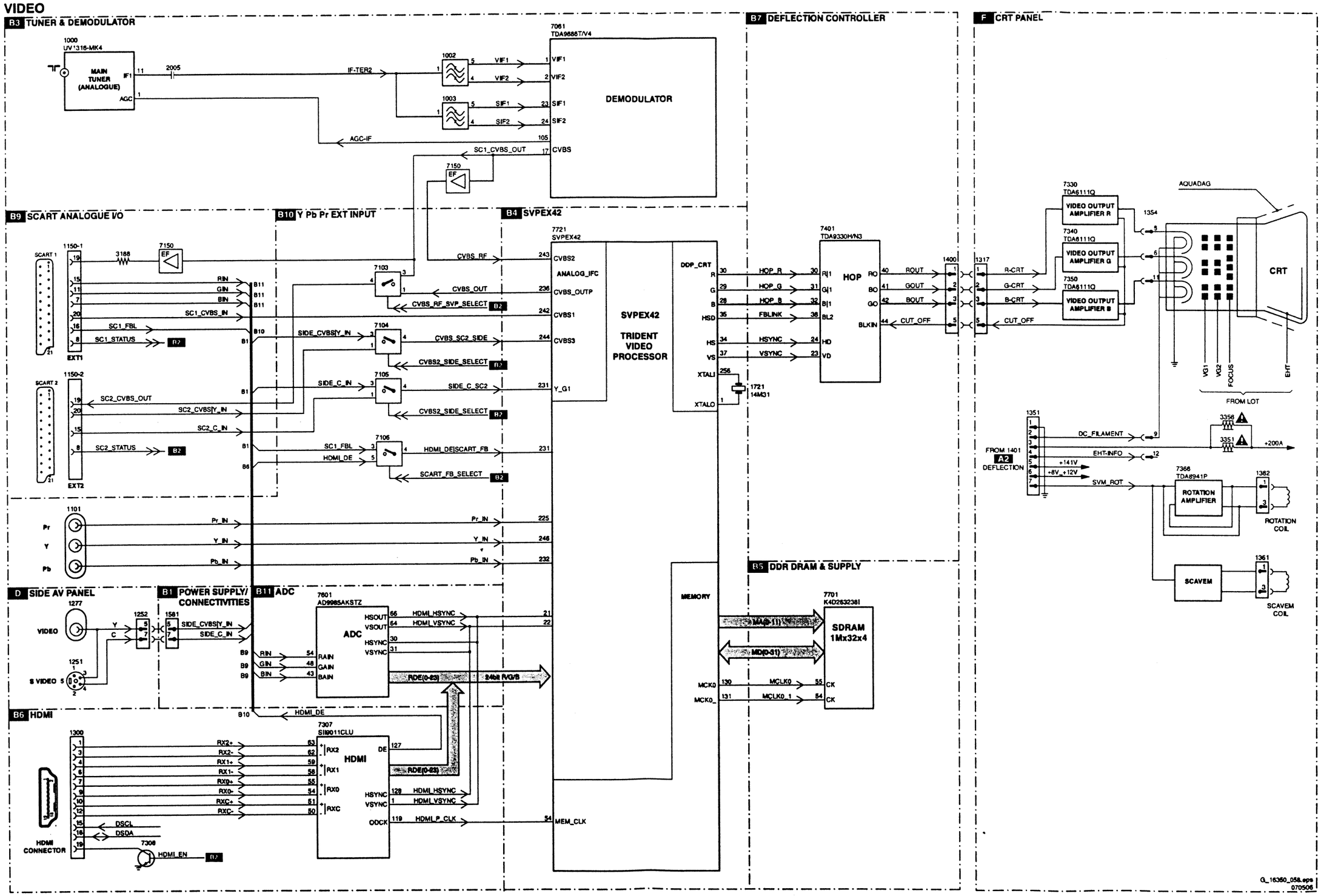


Testpoint Overview LSP

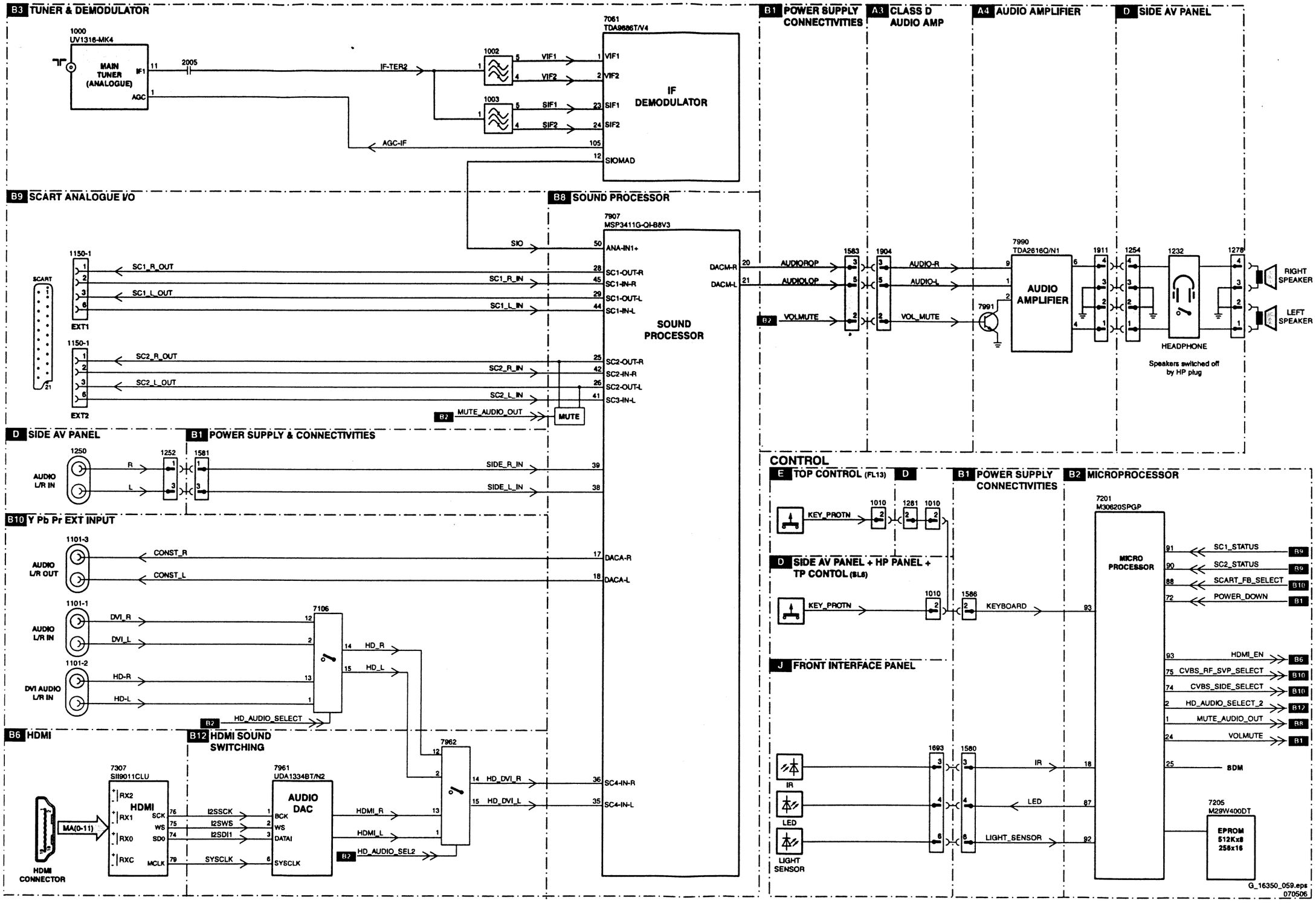
F232 A8 F233 A8 F234 A9 F235 A10 F241 A10 F242 A10 F243 A10 F246 B8 F247 A8 F248 A8 F249 A7 F250 A6 F401 D6 F402 E7 F404 F8 F416 G6 F418 G7 F419 G8 F451 F9 F452 G10 F453 C7 F455 C7 F456 G10 F457 G10 F458 D8 F459 G7 F462 F9 F464 F6 F465 F6 F466 D9 F469 D9 F472 C8 F475 C8 F476 D8 F478 D9 F481 E9 F482 C8 F483 D8 F500 D1 F501 F2 F502 E2 F503 G1 F504 F1 F506 G1 F507 G1 F508 F3 F509 G4 F535 C3 F537 C5 F541 D3 F542 D3 F552 E5 F561 D4 F562 D5 F563 D5 F573 D6 F574 D4 F575 F5 F576 C4 F578 C4 F580 D6 F581 C4 F582 C3 F583 E5 F620 C8 F627 A5 F628 A5 F629 B8 F630 B8 F631 B8 F632 B8 F672 A6 F673 B8 F674 C6 F675 B6 F676 B6 F677 B9 F678 C6 F679 C7 F701 D9 F702 D10 F703 D10 F704 D10 F705 C9 F706 C10 F708 C10 F710 C10 F711 B10 F712 C10 F713 C9 F714 B10 F715 B9 F716 B10 F717 C10 F718 B9 F720 B10 F721 B9 F722 B10 F723 B10 F724 B10 F901 B4 F903 A4 F904 B3 F905 C3 F910 B3 F911 B4 F912 A5 F913 B2 F950 A5 F951 B5 F952 A4 F955 B4 F956 C3 F958 A5 F959 A5 F1232 A9 F1239 A9 F1240 A9 F1241 A6 F1242 A6 F1247 A6 F1248 B8 F1249 A7 F1253 A7 F1254 A7 F1255 A7 F1256 B6 F1259 A7 F1260 A9 F1261 A9 F1402 G9 F1410 F10 F1413 D6 F1414 C7 F1415 D7 F1418 G6 F1419 G6 F1420 E6 F1423 D7 F1428 F7 F1432 E8 F1434 D8 F1435 D8 F1436 D8 F1438 D9 F1439 E8 F1440 E8 F1442 E10 F1443 F9 F1445 D7 F1446 D7 F1447 D6 F1448 D6 F1449 D6 F1450 F6 F1453 G9 F1455 F9 F1457 F8 F1458 F8 F1459 F9 F1460 D8 F1462 G7 F1463 G10 F1464 F10 F1466 E8 F1468 E8 F1469 E9 F1470 D8 F1473 E7 F1475 F9 F1476 D9 F1480 D9 F1481 D9 F1482 G10 F1485 F9 F1487 D7 F1488 G6 F1489 G7 F1490 D7 F1491 D7 F1492 E9 F1493 G10 F1494 E8 F1495 D9 F1496 E7 F1497 F6 F1499 D7 F1500 F3 F1501 G3 F1502 G2 F1503 G1 F1504 G1 F1506 F3 F1507 E2 F1509 F4 F1510 E3 F1511 G5 F1512 E4 F1513 F5 F1514 F5 F1515 F5 F1516 G5 F1517 G5 F1518 F5 F1519 G5 F1520 F6 F1521 G5 F1522 D6 F1523 F6 F1525 E3 F1526 F3 F1527 G6 F1528 E4 F1529 D4 F1530 F3 F1531 E3 F1532 E3 I533 E4 I534 F2 I536 E3 I537 E3 I538 D4 I539 D3 I540 D3 I542 D2 I543 C3 I544 E4 I545 C3 I546 F5 I547 C4 I548 F5 I550 E3 I551 E5 I552 E5 I553 F3 I554 F3 I555 E4 I557 E2 I558 D4 I559 G2 I560 F4 I561 E4 I562 E4 I563 E2 I564 F6 I565 D4 I566 D4 I568 D3 I569 D5 I570 D5 I571 E6 I572 F1 I573 D5 I574 D6 I575 E6 I577 C4 I578 E6 I579 E5 I580 D5 I581 D4 I582 G5 I583 F1 I586 E5 I587 D4 I588 C4 I589 D5 I590 D4 I591 D4 I592 D4 I593 D4 I596 D6 I597 D5 I599 D5 I602 A9 I603 C6 I604 B7 I605 C7 I606 C6 I608 C6 I609 C9 I610 B9 I611 C9 I612 A7 I616 B8 I621 A6 I622 A6 I623 A5 I624 A5 I625 A5 I626 A5 I627 C6 I628 C6 I629 C6 I630 B6 I631 C6 I632 A8 I633 B8 I634 C7 I635 A7 I636 B8 I637 B8 I638 C8 I639 C8 I640 B7 I650 C7 I672 B8 I674 A7 I677 B7 I678 B9 I680 B7 I685 B6 I686 B6 I687 B6 I688 B7 I689 B7 I690 B7 I691 A5 I693 C7 I694 C7 I695 B7 I696 A6 I701 D9 I702 D10 I703 C9 I704 D10 I705 C9 I706 C10 I707 C10 I708 C10 I709 C9 I710 C9 I711 B9 I712 B10 I713 B10 I714 B10 I715 B10 I716 B10 I717 C10 I719 D9 I720 C9 I721 D9 I722 C10 I723 B9 I724 B9 I725 B9 I726 C9 I727 A10 I728 B10 I729 A10 I731 D9 I732 D9 I733 C9 I734 C9 I735 C9 I736 B10 I737 B9 I738 C10 I739 D10 I740 C10 I741 C10 I901 B4 I902 C2 I903 A3 I904 A3 I908 A3 I909 A3 I913 A4 I914 A4 I915 B4 I916 B4 I918 B4 I920 C4 I921 A3 I922 B3 I924 B3 I925 A3 I926 B3 I927 A3 I928 B4 I930 B4 I934 B4 I935 C3 I936 A3 I938 B3 I941 A3 I943 A3 I945 B4 I948 A3 I951 B5 I952 B5 I953 A5 I954 B5 I956 B4 I957 B5 I958 C5 I959 B4 I960 B5 I962 B5 I963 C4 I964 C4 I965 B5 I967 C4



Block Diagram Video

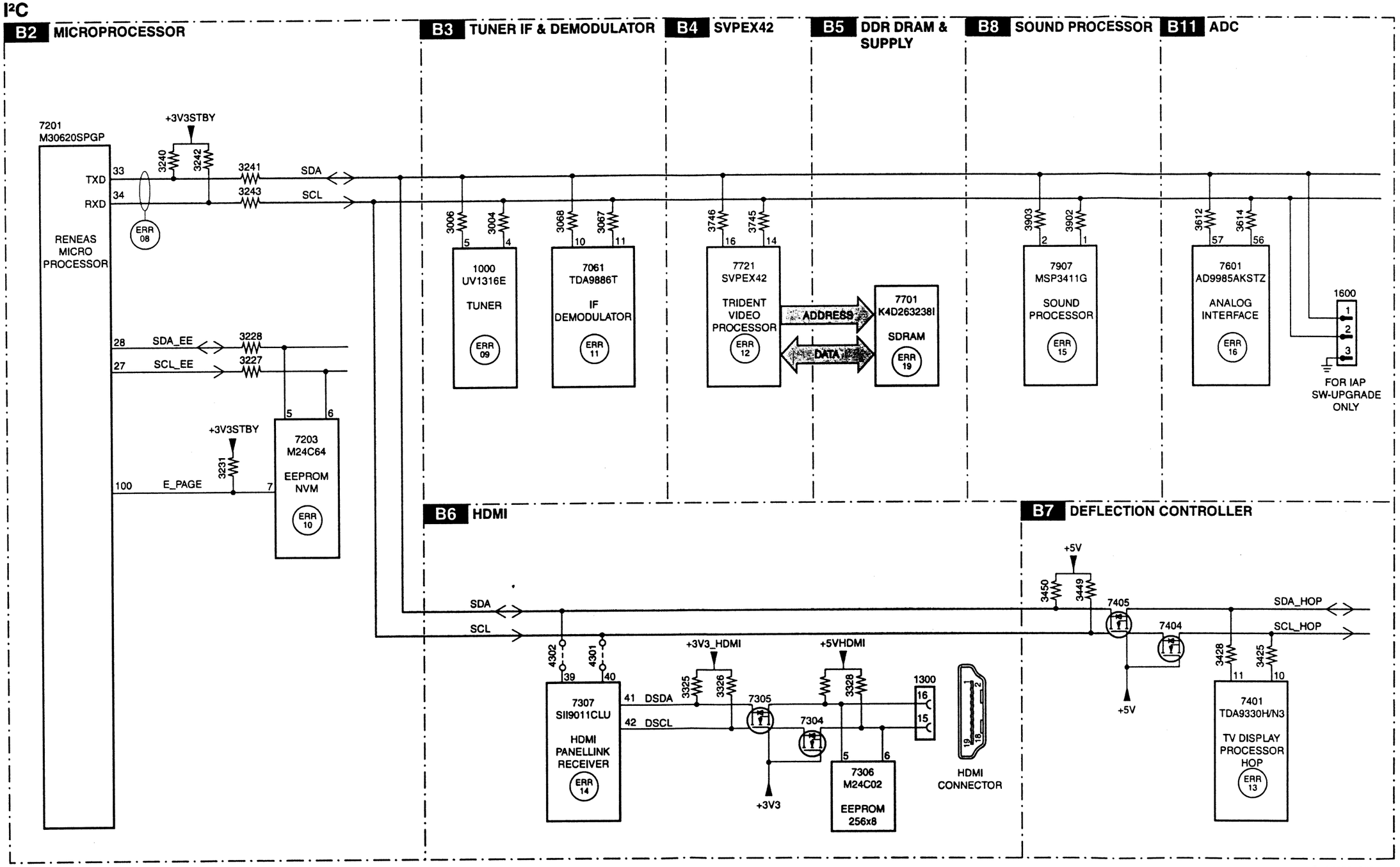


Block Diagram Audio



I2C Overview

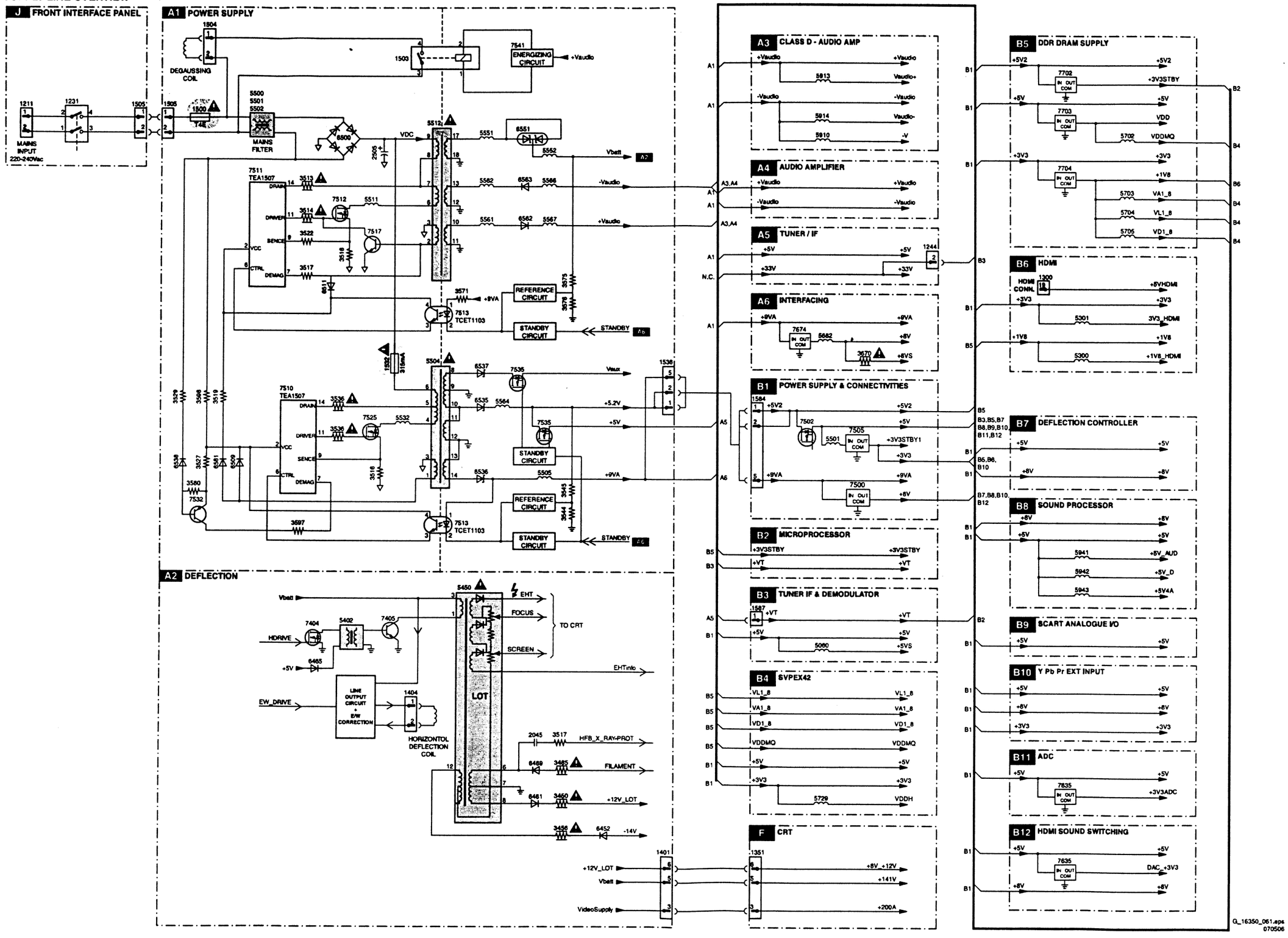
I²C



G_16350_060.eps
070506

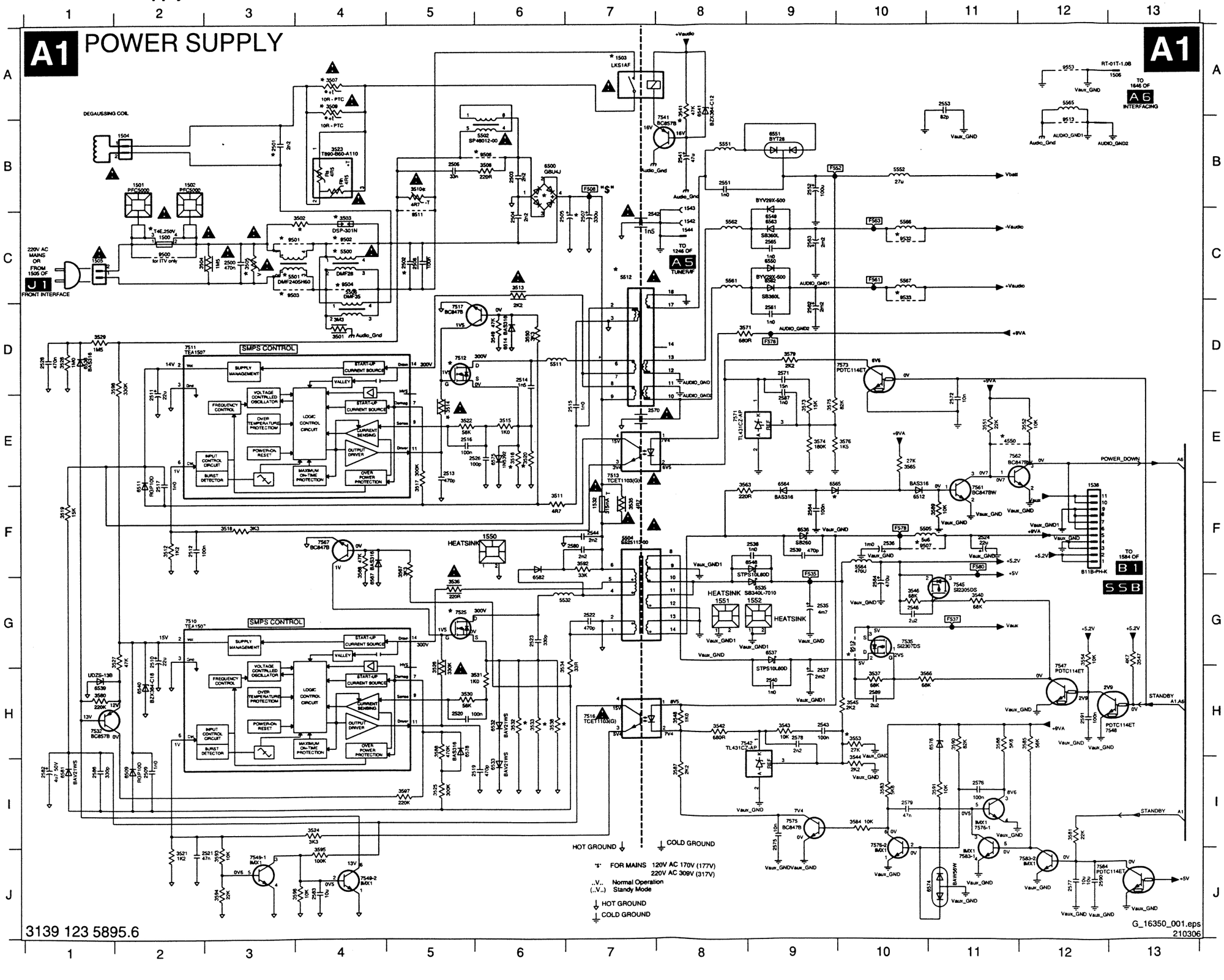
Supply Lines Overview

SUPPLY LINE OVERVIEW



7. Circuit Diagrams and PWB Layouts

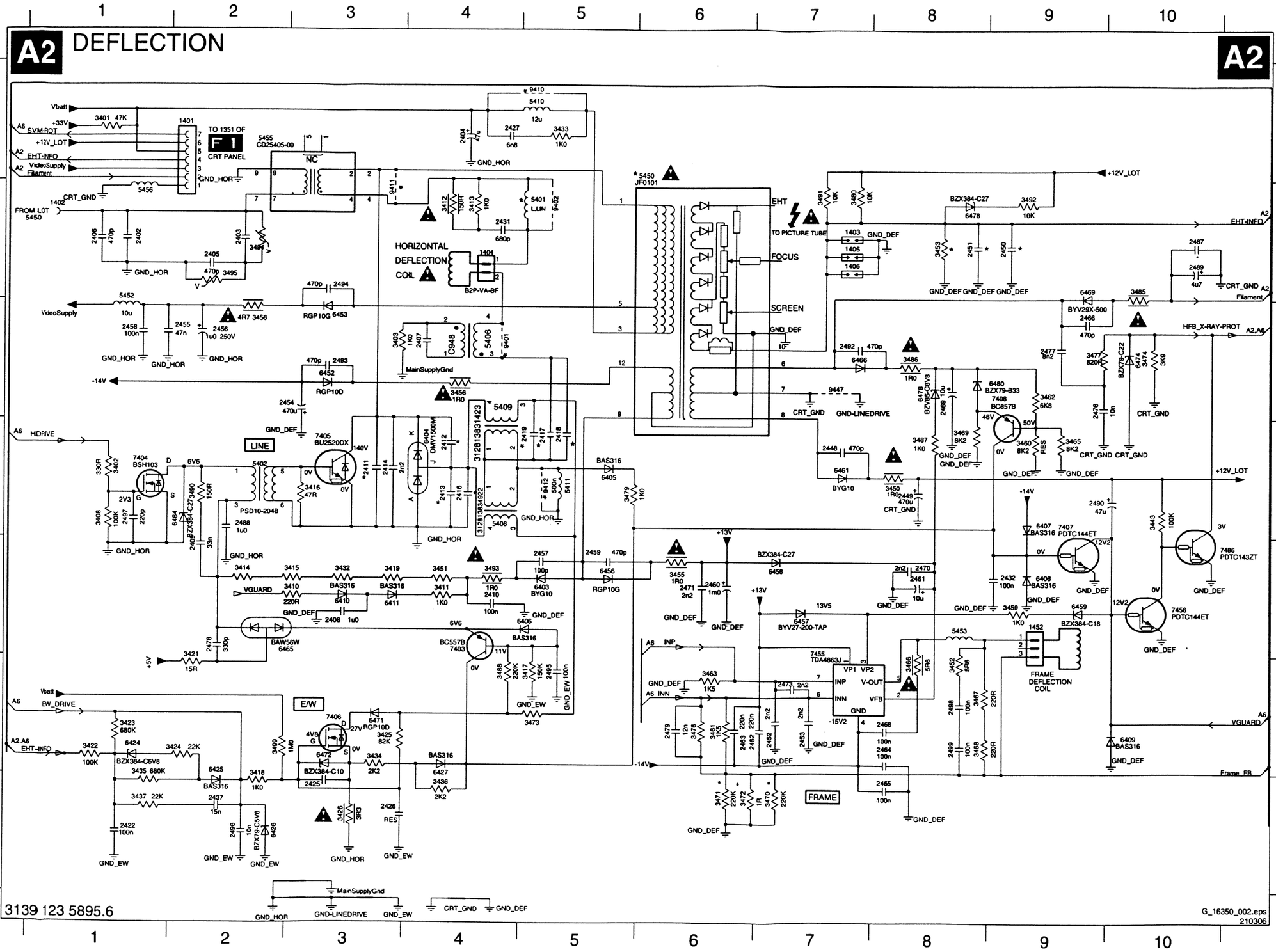
LSP: Power Supply



1500 C2	3545 H10	9507 F10
1501 B2	3546 G10	9511 C5
1502 B2	3547 G13	9512 G10
1503 A7	3548 H8	9513 B12
1504 B2	3549 D6	9532 C10
1505 C1	3550 D6	9533 C10
1506 A13	3551 E11	9553 A12
1532 F7	3552 E12	F508 B7
1538 F12	3553 H10	F535 G9
1542 C8	3554 G12	F537 G11
1543 B8	3563 F8	F552 B9
1544 C8	3565 E10	F561 C10
1550 F6	3566 H10	F563 C10
1551 G8	3567 F5	F576 D9
1552 G8	3568 F4	F578 F10
2500 C3	3571 D8	F580 F11
2501 B3	3573 E9	
2502 C5	3574 E9	
2503 B6	3575 E9	
2504 C6	3576 E10	
2505 C6	3579 D9	
2506 B5	3580 H1	
2507 C7	3581 I12	
2508 C5	3583 I10	
2509 I2	3584 I10	
2510 G2	3585 H12	
2511 E2	3586 H11	
2512 F2	3587 I8	
2513 E5	3588 H5	
2514 D6	3589 F11	
2515 E7	3590 H11	
2516 E5	3591 I11	
2517 F2	3592 F7	
2519 I6	3593 J3	
2520 H5	3594 J3	
2521 J3	3595 J4	
2522 G7	3596 J4	
2523 G6	3597 I5	
2524 F11	3598 D2	
2526 E6	4550 E11	
2528 D1	5500 C4	
2535 G9	5501 C3	
2536 F10	5502 B6	
2537 H9	5504 F7	
2538 F9	5505 F10	
2539 F9	5506 C4	
2540 H9	5511 D6	
2541 B8	5512 C7	
2542 C7	5532 G6	
2543 H9	5551 B8	
2544 F7	5552 B10	
2546 G10	5561 C8	
2551 B8	5562 C8	
2552 B9	5564 F10	
2553 A11	5565 A12	
2561 D9	5566 C10	
2562 D9	5567 C10	
2563 C9	6500 B6	
2564 F9	6509 I2	
2565 C9	6511 F2	
2570 E7	6512 F10	
2571 D9	6514 D6	
2572 E11	6532 H6	
2575 I9	6533 I6	
2576 I11	6535 G9	
2577 J12	6536 F9	
2578 H9	6537 G9	
2579 I10	6538 D1	
2580 F7	6539 H1	
2582 I1	6540 H2	
2583 J4	6541 A8	
2584 G10	6548 F9	
2586 I1	6549 C9	
2587 E9	6550 C9	
2589 H10	6551 B9	
2590 J12	6562 C9	
2591 H12	6563 C9	
3501 D4	6564 F9	
3502 C4	6565 F9	
3503 C4	6567 G4	
3504 C2	6574 J11	
3505 C3	6575 E6	
3507 A4	6576 H11	
3508 B6	6578 H5	
3509 A4	6581 I1	
3510 B5	6582 F6	
3511 F6	7510 G2	
3512 F2	7511 D2	
3513 C6	7512 D5	
3514 E5	7513 E7	
3515 E6	7516 H7	
3516 E6	7517 D5	
3517 F5	7525 G5	
3518 F3	7532 H1	
3519 F1	7535 G10	
3520 E6	7541 B8	
3521 J2	7542 H8	
3522 E5	7545 G11	
3523 B4	7547 G12	
3524 I4	7548 H13	
3525 I5	7549-1 J3	
3526 H5	7549-2 J4	
3527 G2	7561 F11	
3528 D1	7562 E11	
3529 D1	7567 F4	
3530 H5	7571 E8	
3531 H6	7573 D10	
3532 H6	7575 I9	
3533 H6	7576-1 I11	
3534 H6	7576-2 I10	
3535 F7	7583-1 J11	
3536 G5	7583-2 J12	
3537 H10	7584 J12	
3538 H6	9500 C2	
3540 G11	9501 C3	
3541 A8	9502 C4	
3542 H8	9503 C3	
3543 H9	9504 C4	
3544 I10	9506 B6	

LSP: Deflection

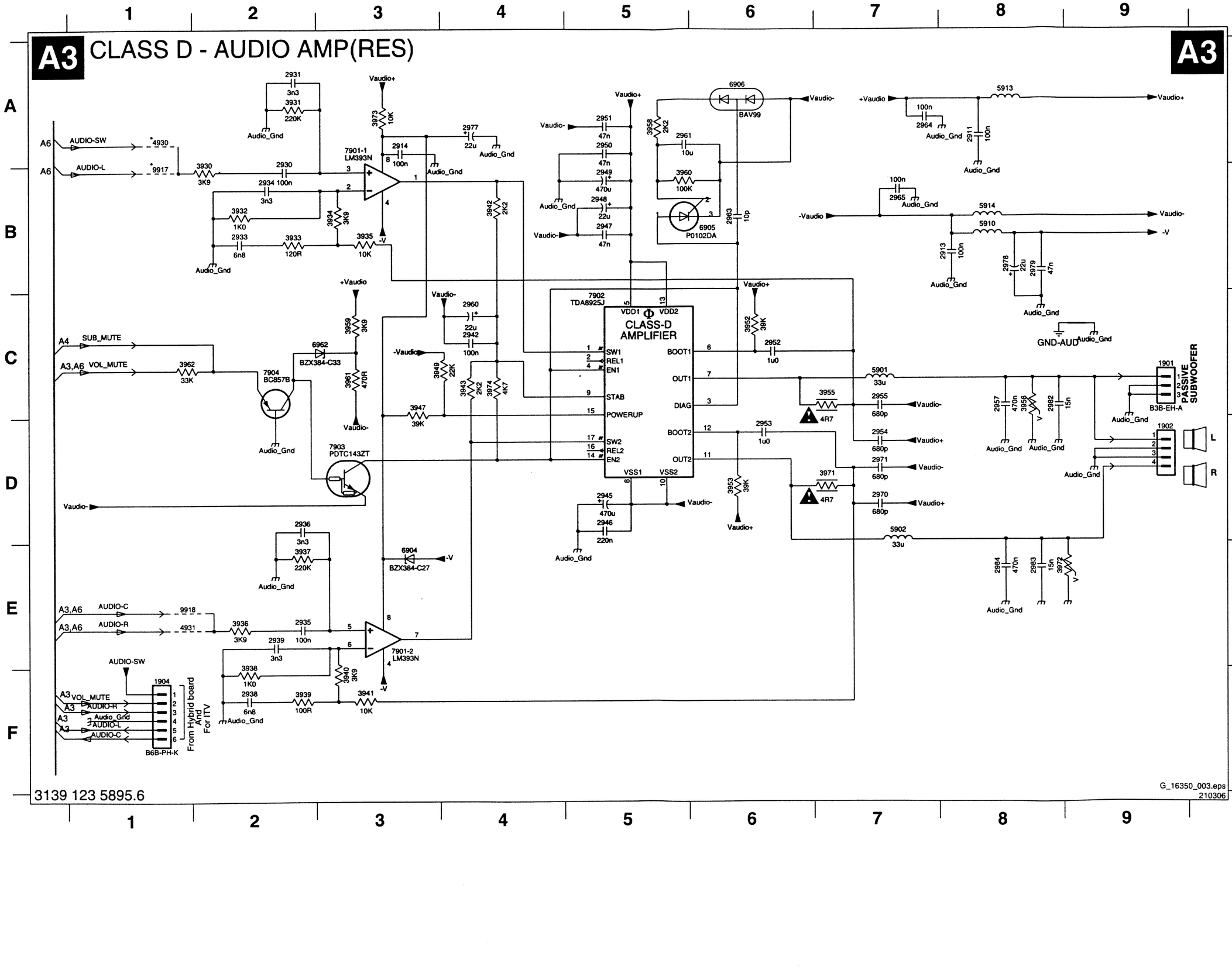
A2 DEFLECTION



1401 A2	3426 G3	7406 F3
1402 B1	3432 E3	7407 D9
1403 B7	3433 A5	7408 C9
1404 B4	3434 F3	7455 E7
1405 B7	3435 G1	7456 E10
1406 B7	3436 G4	7486 E10
1452 E9	3437 G1	9401 C4
2402 B1	3443 D10	9402 B5
2403 B2	3450 D8	9410 A5
2404 A4	3451 E4	9411 B3
2405 B2	3452 F8	9412 D5
2406 B1	3453 B8	9447 C7
2407 C4	3455 E6	
2408 E3	3456 C4	
2409 E2	3458 C2	
2410 E4	3459 E9	
2411 D3	3460 D9	
2412 D4	3461 F6	
2413 D4	3462 C9	
2414 D3	3463 F6	
2416 D4	3465 D9	
2417 D5	3466 F8	
2418 D5	3467 F8	
2419 D5	3468 F8	
2422 G1	3469 D8	
2425 G3	3470 G7	
2426 G3	3471 G6	
2427 A4	3472 G6	
2431 B4	3473 F5	
2432 E9	3474 C10	
2437 G2	3476 F6	
2448 D7	3477 C9	
2449 D8	3479 D5	
2450 B9	3480 B7	
2451 B8	3485 B10	
2452 F7	3486 C8	
2453 F7	3487 D8	
2454 C2	3488 F4	
2455 C2	3490 D2	
2456 C2	3491 B7	
2457 E5	3492 B9	
2458 C1	3493 E4	
2459 E5	3494 B2	
2460 E6	3495 B2	
2461 E8	3499 F2	
2462 F7	5401 B5	
2463 F6	5402 D2	
2464 F8	5406 C4	
2465 G8	5408 D4	
2466 C9	5409 C4	
2468 F8	5410 A5	
2469 C8	5411 D5	
2470 E8	5450 A6	
2471 E6	5452 C1	
2473 F7	5453 E8	
2476 C9	5455 A2	
2477 C9	5456 B1	
2478 E2	6403 E5	
2479 F6	6404 D4	
2487 B10	6405 D5	
2488 D2	6406 E5	
2489 B10	6407 D9	
2490 D9	6408 E9	
2492 C7	6409 F10	
2493 C3	6410 E3	
2494 B3	6411 E3	
2495 F5	6424 F1	
2496 G2	6425 F2	
2497 D1	6426 G2	
2498 F8	6427 F4	
2499 F8	6452 C3	
3401 A1	6453 C3	
3402 D1	6456 E5	
3403 C3	6457 E7	
3408 D1	6458 E7	
3410 E3	6459 E9	
3411 E4	6461 D7	
3412 B4	6464 D2	
3413 B4	6465 E3	
3414 E2	6466 C7	
3415 E3	6469 B9	
3416 D3	6471 F3	
3417 F5	6472 F3	
3418 G2	6474 C10	
3419 E3	6476 C8	
3421 F2	6478 B8	
3422 F1	6480 C9	
3423 F1	7403 E4	
3424 F2	7404 D1	
3425 F3	7405 D3	

LSP: Class D Audio Amplifier (Res)

A3 CLASS D - AUDIO AMP(RES)

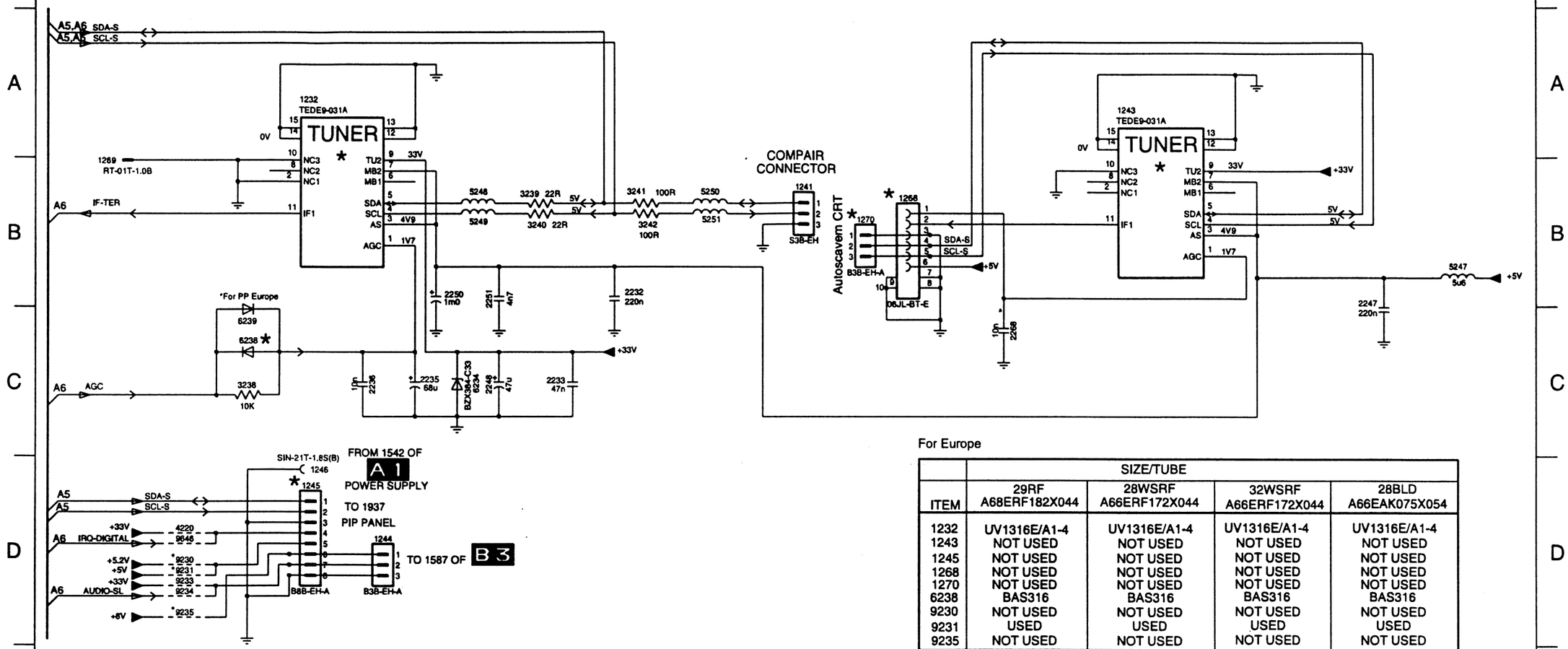


1901	C9	5913	A8
1902	D9	5914	B8
1904	F1	6904	E3
2911	A8	6905	B6
2913	B8	6906	A6
2914	A3	6962	C3
2930	B2	7901-1	A3
2931	A2	7901-2	E3
2933	B2	7902	C5
2934	B2	7903	D3
2935	E2	7904	C2
2936	D2	9917	B1
2938	F2	9918	E1
2939	E2		
2942	C4		
2945	D5		
2946	D5		
2947	B5		
2948	B5		
2949	B5		
2950	A5		
2951	A5		
2952	C6		
2953	D6		
2954	D7		
2955	C7		
2957	C8		
2960	C4		
2961	A5		
2963	B6		
2964	A7		
2965	B7		
2970	D7		
2971	D7		
2977	A4		
2978	B8		
2979	B8		
2982	C8		
2983	E8		
2984	E8		
3930	B2		
3931	A2		
3932	B2		
3933	B2		
3934	B3		
3935	B3		
3936	E2		
3937	E2		
3938	F2		
3939	F2		
3940	F3		
3941	F3		
3942	B4		
3943	C4		
3947	C3		
3949	C3		
3952	C6		
3953	D6		
3955	C7		
3956	C8		
3958	A5		
3959	C3		
3960	B5		
3961	C3		
3962	C1		
3971	D7		
3972	E8		
3973	A3		
3974	C4		
4930	A1		
4931	E1		
5901	C7		
5902	D7		
5910	B8		

LSP: Tuner IF (Res)

1232 A2 1241 B6 1243 A8 1244 D3 1245 D2 1246 D2 1268 B6 1269 B1 1270 B6 2232 B4 2233 C4 2235 C3 2236 C3 2247 B9 2248 C4 2250 B3 2251 B4 2268 C7 3238 C2 3239 B4 3240 B4 3241 B4 3242 B5 4220 D1 5247 B10 5248 B3 5249 B3 5250 B5 6234 C3 6238 C2 6239 C2 9230 D1 9231 D1 9233 D1 9234 D1 9235 D1 9646 D1

A5 TUNER / IF (RES)



For Europe

ITEM	SIZE/TUBE 29RF A68ERF182X044	28WSRF A66ERF172X044	32WSRF A66ERF172X044	28BLD A66EAK075X054
1232	UV1316E/A1-4	UV1316E/A1-4	UV1316E/A1-4	UV1316E/A1-4
1243	NOT USED	NOT USED	NOT USED	NOT USED
1245	NOT USED	NOT USED	NOT USED	NOT USED
1268	NOT USED	NOT USED	NOT USED	NOT USED
1270	NOT USED	NOT USED	NOT USED	NOT USED
6238	BAS316	BAS316	BAS316	BAS316
9230	NOT USED	NOT USED	NOT USED	NOT USED
9231	USED	USED	USED	USED
9235	NOT USED	NOT USED	NOT USED	NOT USED

3139 123 5895.6

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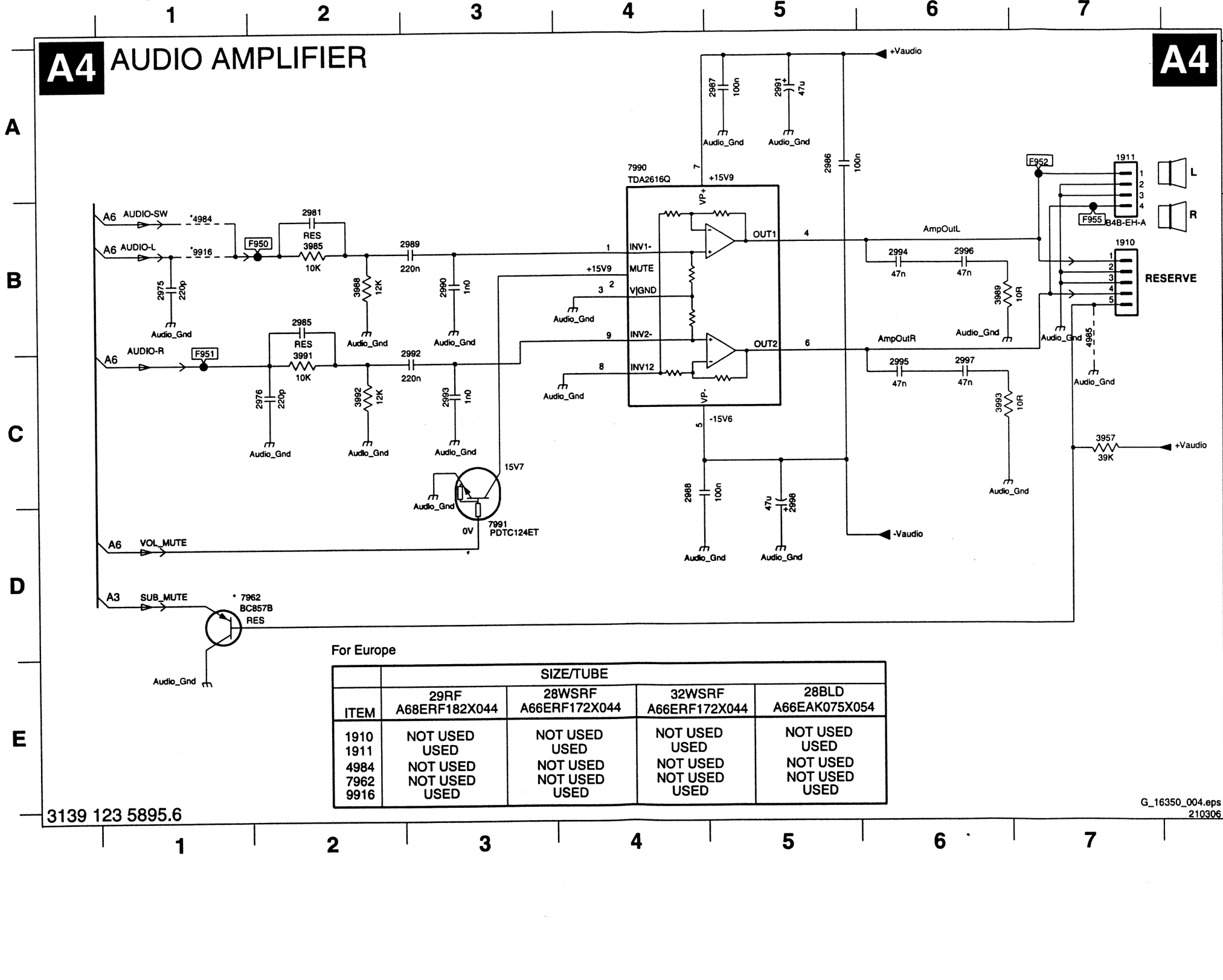
LSP: Audio Amplifier

A4 AUDIO AMPLIFIER



1910 B7
1911 A7
2975 B1
2976 C2
2981 B2
2985 B2
2986 A5
2987 A5
2988 C4
2989 B3
2990 B3
2991 A5
2992 C3
2993 C3
2994 B6
2995 C6
2996 B6
2997 C6
2998 D5
3957 C7
3985 B2
3988 B2
3989 B6
3991 C2
3992 C2
3993 C6
4984 B1
4985 B7
7962 D2
7990 A4
7991 D3
9916 B1
F950 B2
F951 C1
F952 A7
F955 B7

For Europe

ITEM	SIZE/TUBE			
	29RF A68ERF182X044	28WSRF A66ERF172X044	32WSRF A66ERF172X044	28BLD A66EAK075X054
1910	NOT USED	NOT USED	NOT USED	NOT USED
1911	USED	USED	USED	USED
4984	NOT USED	NOT USED	NOT USED	NOT USED
7962	NOT USED	NOT USED	NOT USED	NOT USED
9916	USED	USED	USED	USED

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210306

LSP: Interfacing

A6 INTERFACING

TO 1693 OF J1 FRONT INTERFACE PANEL

TO PIXEL PLUS FRONT INTERFACE

TO A10 2T PIP DW PANEL

TO A10 2T PIP DW PANEL

2FH PANEL, 3rd SCART HDMI

TO 1936 OR 0240 OF D SIDE AV PANEL

TO 1340 OF F CRT PANEL

TO 1582 OF B1

FOR L06HD

TO 2T PIP DW PANEL

TO A10 2T PIP DW PANEL

FROM 1506 OF A1 POWER SUPPLY

For L06HD

TO SSB PANEL

For Europe

ITEM	SIZE/TUBE 29RF A68ERF182X044	28WSRF A66ERF172X044	32WSRF A66ERF172X044	28BLD A66EAK075X054
1620	USED	USED	USED	USED
1623	NOT USED	NOT USED	NOT USED	NOT USED
1624	USED	USED	USED	USED
1625	NOT USED	NOT USED	NOT USED	NOT USED
1645	USED	USED	USED	USED
4683	USED	USED	USED	USED
4694	NOT USED	NOT USED	NOT USED	NOT USED
9620	NOT USED	NOT USED	NOT USED	NOT USED
9621	USED	USED	USED	USED
9626	USED	USED	USED	USED

	9674	9664	4624	4625	9675	9686
PIXEL PLUS	–	–	–	JMP	JMP	–
SALSA	JMP	JMP	JMP	–	–	JMP

1607 G1
1608 H1
1620 A13
1621 A9
1623 B2
1624 B2
1625 C2
1629 B12
1630 D13
1631 C12
1635 D12
1645 E12
1646 F12
1669 H3
1670 H1
1683 E12
1684 E2
2663 H11
2666 B11
2667 B11
2669 B12
2670 B12
2671 B12
2672 B12
2673 B12
2674 B7
2675 D11
2676 H6
2677 H7
2678 H7
2679 H6
2680 G7
2681 H7
2682 G6
2686 E6
2689 E7
2690 E8
2691 B7
2692 B5
2693 H9
2694 H9
2695 H9
2696 H10
2697 H10
2698 H6
3623 B2
3624 B2
3625 B2
3626 C2
3627 H5
3628 H5
3629 A5
3630 A5
3670 C6
3677 H6
3683 C5
3685 C6
3686 G6
3687 G5
3688 G6
4624 D2
4625 D2
4664 B3
4683 H12
4684 F8
4685 F8
4694 A11
5680 G7
5681 E7
5682 B7
5683 H12
5684 H12
5685 H10
5686 G10
5687 H2
5688 H2
6681 G8
6682 H8
6683 C5
6684 H5
6685 H6
7673 E6
7674 B6
7675 A5
7676 A5
9620 A10
9621 A10
9626 A11
9669 E2
9670 E2
9671 E2
9672 E2
9674 C2
9675 E6
9686 E6
9691 H3

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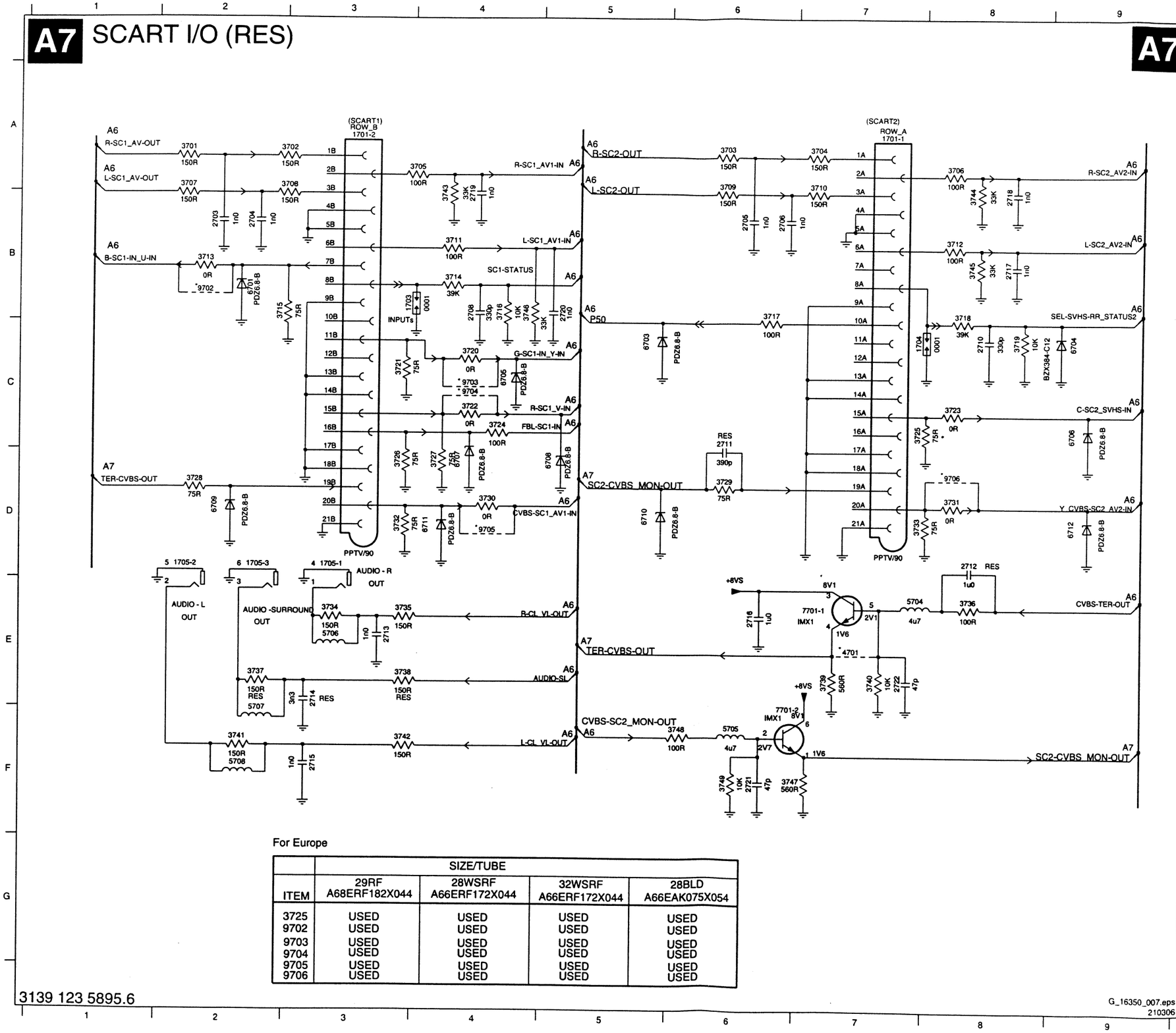
LSP: SCART I/O (Res)

A7 SCART I/O (RES)



For Europe

ITEM	SIZE/TUBE			
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9702	USED	USED	USED	USED
9703	USED	USED	USED	USED
9704	USED	USED	USED	USED
9705	USED	USED	USED	USED
9706	USED	USED	USED	USED

	1701-1 A7	3736 E8
	1701-2 A3	3737 E2
	1703 B3	3738 E3
	1704 C7	3739 E7
	1705-1 D3	3740 E7
	1705-2 D2	3741 F2
	1705-3 D2	3742 F3
A	2703 B2	3743 B4
	2704 B2	3744 B8
	2705 B6	3745 B8
	2706 B6	3746 B4
	2708 B4	3747 F6
	2710 C8	3748 F6
	2711 C6	3749 F6
	2712 D8	4701 E7
B	2713 E3	5704 E7
	2714 E3	5705 F6
	2715 F3	5706 E3
	2716 E6	5707 F2
	2717 B8	5708 F2
	2718 B8	6701 B2
	2719 B4	6703 C5
	2720 B5	6704 C9
C	2721 F6	6705 C4
	2722 E7	6706 C9
	3701 A2	6707 D4
	3702 A3	6708 D5
	3703 A6	6709 D2
	3704 A7	6710 D5
	3705 A4	6711 D4
D	3706 A8	6712 D9
	3707 A2	7701-1 E7
	3708 A3	7701-2 F6
	3709 A6	9702 B2
	3710 A7	9703 C4
	3711 B4	9704 C4
	3712 B8	9705 D4
	3713 B2	9706 D8
E	3714 B4	
	3715 B2	
	3716 B4	
	3717 B6	
	3718 B8	
	3719 C8	
	3720 C4	
	3721 C3	
F	3722 C4	
	3723 C8	
	3724 C4	
	3725 C7	
	3726 D3	
	3727 D4	
	3728 D2	
	3729 D6	
G	3730 D4	
	3731 D8	
	3732 D3	
	3733 D7	
	3734 E3	
	3735 E3	

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Layout LSP (Top Side)

1232 G9 1270 G6 1503 C2 1544 C4 1623 F6 1646 G6 1902 E3 2403 A9 2414 A8 2451 A9 2488 A7 2505 A4 2524 E4 2542 B4 2570 C4 2692 E7 2964 F3 3413 A7 3426 C7 3458 C8 3472 D9 3492 D8 3504 A1 3514 A5 3529 B3 3575 C5 3683 E7 3722 F9 9402 B6 9670 G8
1241 G9 1401 E7 1504 D1 1550 C3 1624 E6 1669 F8 1904 F5 2404 C7 2416 B7 2454 A9 2489 C8 2506 B3 2528 B3 2544 C3 2580 C3 2945 F3 2991 E5 3414 A7 3432 B9 3462 C8 3473 C7 3493 C9 3505 A1 3515 B5 3531 C3 3579 D6 3687 E8 3724 F9 9410 C7 9671 F8
1243 G8 1402 A9 1505 A1 1551 D3 1625 E6 1670 F7 1910 G4 2405 A9 2417 B7 2456 C8 2490 D8 2507 A4 2535 E4 2551 C5 2582 D4 2948 F3 2998 E5 3415 A8 3433 C8 3466 D9 3477 C8 3494 A9 3507 C2 3516 A5 3535 B2 3587 D4 3701 D9 3725 F9 9411 A7 9672 F7
1244 G7 1404 B6 1506 E4 1552 D3 1629 F8 1683 G6 1911 G4 2406 A8 2418 B7 2458 C8 2500 A1 2508 C1 2536 E4 2552 C5 2584 E4 2949 F4 3240 G9 3418 D7 3434 D7 3467 D9 3485 C8 3495 A9 3508 B2 3519 B4 3536 C3 3592 C3 3703 D9 3726 F9 9412 C7 9673 E6
1245 G7 1452 D9 1532 B2 1607 F9 1630 E8 1684 F8 2235 G9 2407 C6 2419 B7 2460 A9 2501 D1 2510 C3 2537 E3 2561 C4 2674 E7 2957 F3 3401 E7 3419 B9 3450 C9 3468 E9 3486 C9 3499 C7 3509 D2 3520 B5 3550 A6 3598 B3 3713 F9 3728 F9 9413 D8 9674 E6
1246 G9 1500 A2 1538 E5 1608 F9 1631 E8 1701 E9 2248 G8 2411 A7 2431 B7 2461 D9 2502 C1 2511 A5 2539 D4 2562 D4 2676 E7 2960 G3 3402 E7 3421 D6 3451 C9 3469 D8 3487 C9 3501 D1 3510 C2 3523 D2 3563 D4 3627 E8 3714 E9 3729 F9 9415 D8 9675 E6
1268 G6 1501 A2 1542 C4 1620 G5 1635 E9 1705 F9 2250 F9 2412 A7 2449 C9 2468 C9 2503 A4 2514 A5 2540 D3 2563 D5 2688 E7 2977 F3 3403 C6 3422 D7 3455 A9 3470 D9 3488 D6 3502 A2 3511 B5 3524 C4 3566 E5 3628 E8 3717 E9 3730 F9 9417 C9 9677 F6
1269 G9 1502 A2 1543 C4 1621 G8 1645 E5 1901 E3 2402 A8 2413 C7 2450 A9 2469 C9 2504 A4 2523 C3 2541 D3 2565 C5 2689 E6 2978 G3 3412 A7 3425 D7 3456 A9 3471 D9 3490 A6 3503 B2 3513 B5 3525 C4 3571 D6 3670 F8 3720 F9 3731 F9 9422 D8 9680 E6
3930 G3 9423 E8 9681 F6
3933 G4 9424 D7 9682 G5
3936 G2 9425 D8 9683 F6
3955 G3 9426 D8 9685 F6
3957 F4 9427 D7 9686 E6
3959 E4 9429 B8 9687 F7
3971 G3 9434 C6 9688 F7
5247 G7 9435 E8 9689 G8
5401 A6 9436 D9 9690 G6
5402 A6 9437 D7 9691 F8
5406 C6 9438 D6 9692 G7
5408 C7 9440 D7 9693 G7
5409 C7 9441 D9 9694 G8
5410 C7 9442 C7 9695 G8
5411 C7 9443 C9 9696 G6
5450 B8 9444 C7 9699 F8
5452 D8 9447 D8 9702 F9
5453 D9 9450 C7 9703 F9
5455 A7 9451 C9 9704 F9
5456 E8 9500 A2 9705 F9
5500 C1 9501 B1 9706 F9
5501 B1 9502 B2 9720 F9
5502 A3 9503 B1 9721 E9
5504 D3 9504 C2 9722 E9
5505 E4 9506 A3 9723 F9
5506 C2 9507 E4 9903 F4
5511 A4 9511 C2 9904 E4
5512 B5 9512 E4 9905 F5
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5551 C5 9514 B4 9907 F3
5552 C6 9524 E4 9908 G3
5561 C4 9527 C6 9909 F4
5562 C5 9530 D5 9910 F5
5564 E3 9532 E5 9916 G5
5565 E5 9533 E5 9917 G5
5566 E5 9535 C4 9918 F5
5567 E5 9539 E5 9942 F4
5680 F7 9540 C4 9949 F3
5681 E7 9543 B4 9951 F3
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5684 F5 9548 B5 9990 E5
5901 E4 9549 D6
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5913 F3 9553 E5
5914 F3 9554 D6
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6426 D7 9556 D5
6452 A9 9557 D5
6453 C8 9560 E5
6456 A9 9561 E5
6457 D8 9562 E6
6469 C8 9570 A3
6471 D7 9574 C3
6474 D8 9620 G6
6476 C9 9621 G6
6480 C8 9622 E5
6500 A4 9623 E7
6509 C3 9624 F5
6511 A6 9625 G8
6535 D3 9626 G5
6536 D4 9627 E7
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6549 C5 9630 F6
6550 C4 9631 F6
6551 C5 9632 F6
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7542 D4 9656 E6
7571 C6 9658 E9
7673 E6 9659 E8
7674 E7 9660 G8
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7990 F5 9662 E7
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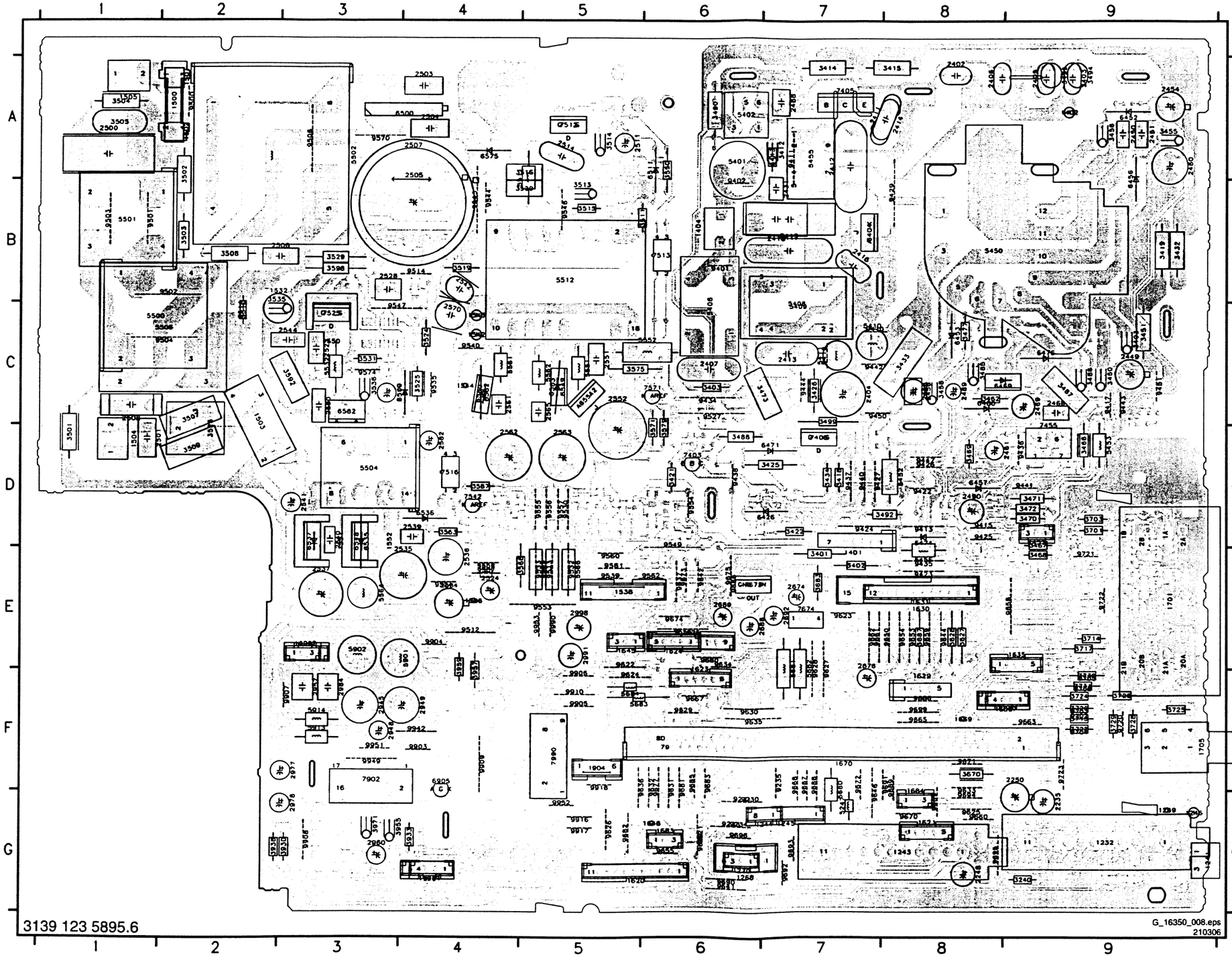

Layout LSP (Overview Bottom Side)

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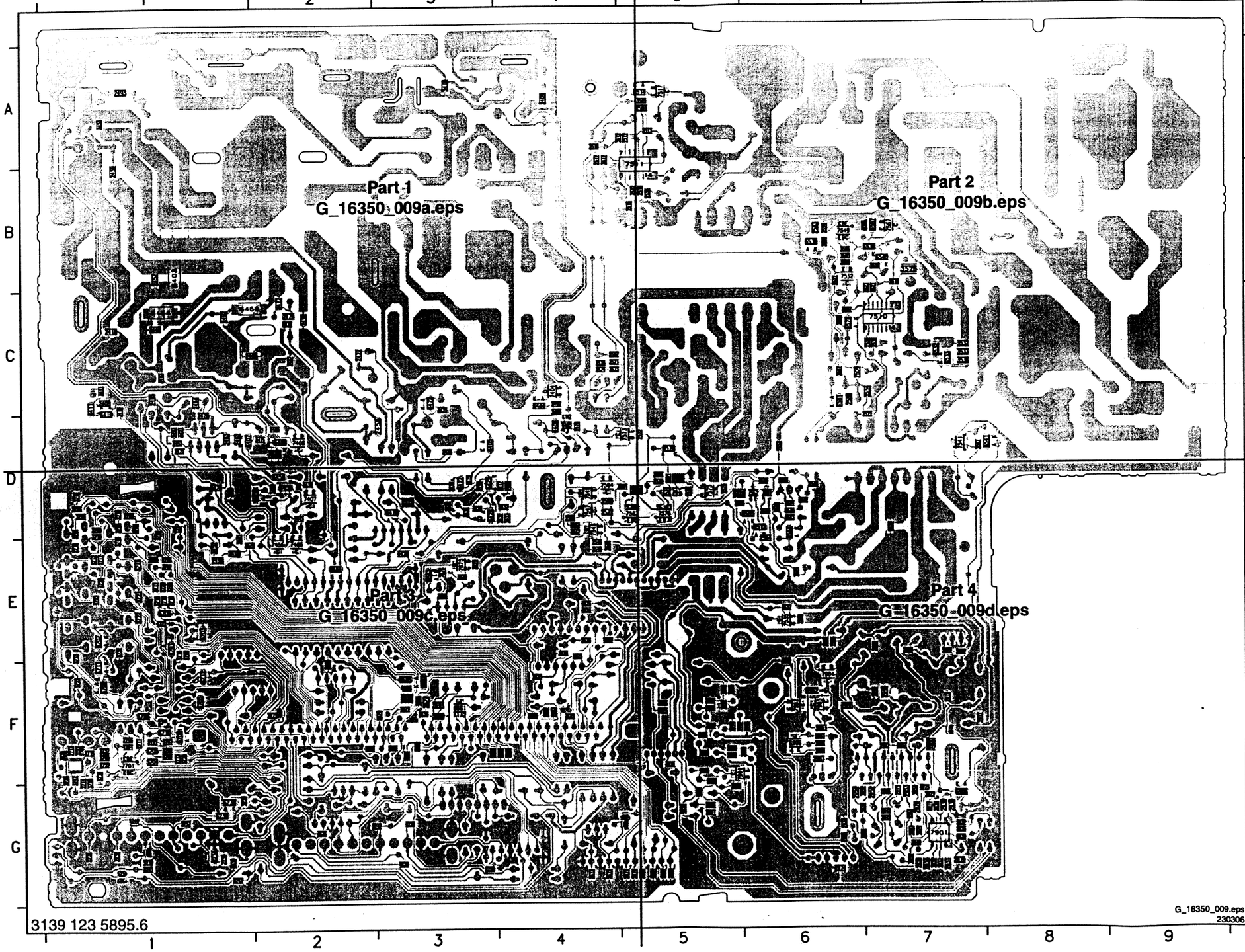
2233 G1 2409 A4 2432 D2 2457 B1 2466 C2 2478 D4 2495 D4 2512 A5 2520 C7 2546 E4 2576 D5 2587 C4 2667 G5 2675 F2 2682 F3 2696 F4 2706 D1 2714 F1 2720 E1 2930 G7 2938 G7 2951 F7 2963 F6 2976 F5 2986 F5 2993 F5 3239 G1 3416 A3
2236 G1 2410 C1 2437 D4 2459 B1 2470 D1 2479 E1 2496 D3 2513 A5 2521 C7 2553 D6 2577 D4 2589 E6 2669 G5 2677 F3 2690 F3 2697 F4 2708 E1 2715 F1 2721 F1 2931 G7 2939 G7 2952 G7 2964 E6 2979 G7 2987 F5 2994 F5 3241 G1 3417 D4
2247 G2 2422 D3 2448 C1 2462 D1 2471 D2 2487 C2 2497 C4 2515 B5 2522 D7 2564 E6 2578 D6 2590 D4 2670 G5 2678 F3 2691 F3 2698 F2 2710 E1 2716 F1 2722 F1 2933 G6 2942 G7 2953 G7 2965 E6 2981 G5 2988 F5 2995 F6 3242 G1 3423 D4
2251 G1 2425 C3 2452 D1 2463 D1 2473 D1 2492 C1 2498 E1 2516 B5 2526 B5 2571 C4 2579 D5 2591 D4 2671 G5 2679 F3 2693 F3 2703 D1 2711 F1 2717 E1 2911 F7 2934 G7 2946 F7 2954 G6 2970 G7 2982 E7 2989 G5 2996 F6 3408 D4 3424 D3
2268 G3 2426 D3 2453 D1 2464 C1 2476 C2 2493 A1 2499 E1 2517 A4 2538 D7 2572 D5 2583 B6 2663 F4 2672 G4 2680 F3 2694 F4 2704 E1 2712 F1 2718 E1 2913 F7 2935 G7 2947 F7 2955 G7 2971 G7 2983 E7 2990 F5 2997 F5 3410 C1 3435 D3



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3452 E1 3742 F1 6465 D4
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3459 D2 3744 D1 6472 C3
3460 D2 3745 E1 6478 D3
3461 E1 3746 E1 6512 D6
3463 D1 3747 F1 6514 A5
3465 D2 3748 F1 6532 C7
3474 C2 3749 F1 6533 C7
3476 D1 3931 G7 6538 B7
3479 D3 3932 G7 6539 B6
3480 D3 3934 G6 6540 B7
3491 D3 3935 G6 6541 D8
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3518 A4 3939 G7 6567 B7
3521 C7 3940 G7 6574 D5
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3526 B7 3942 G7 6578 C6
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3688 F3 5685 G5
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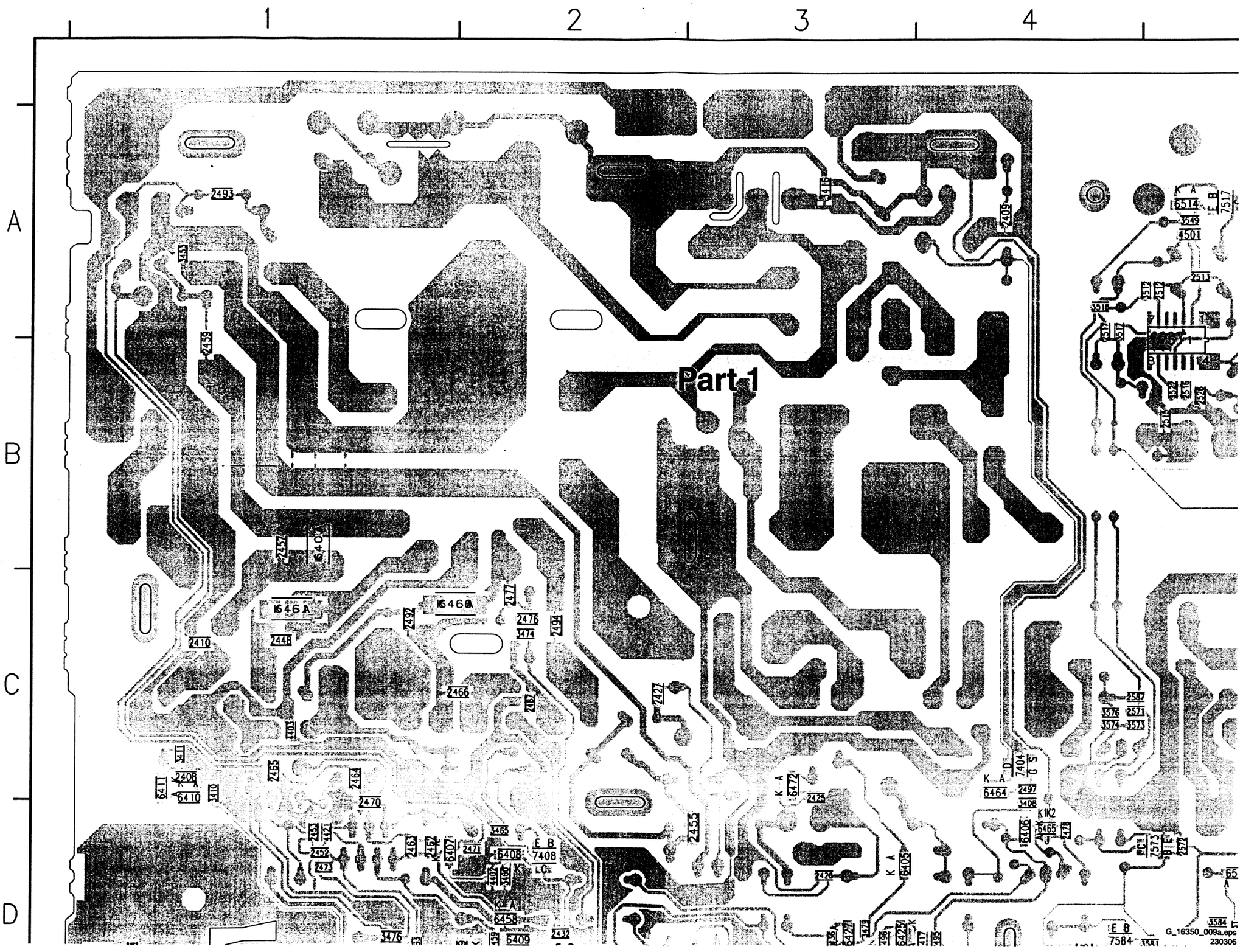
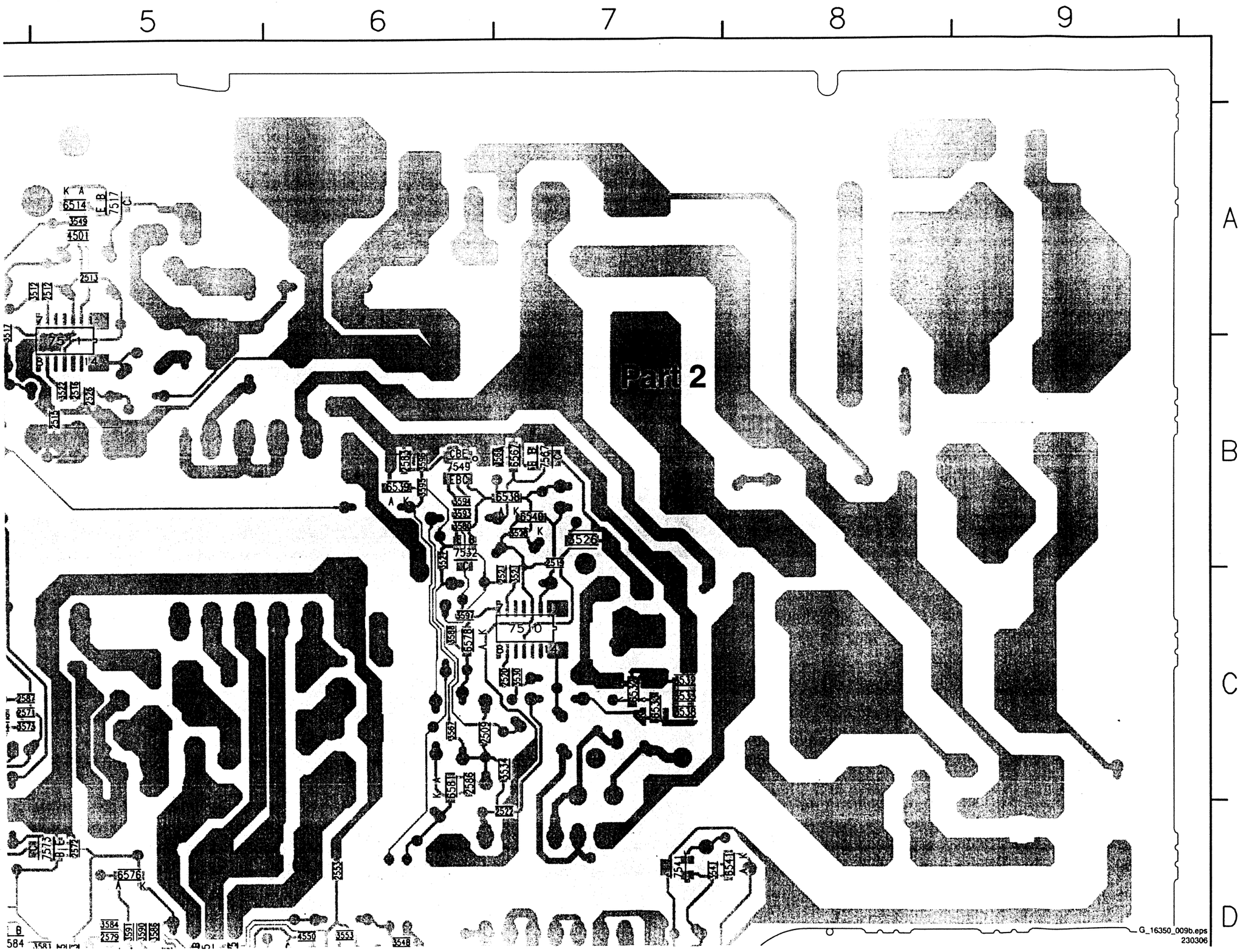
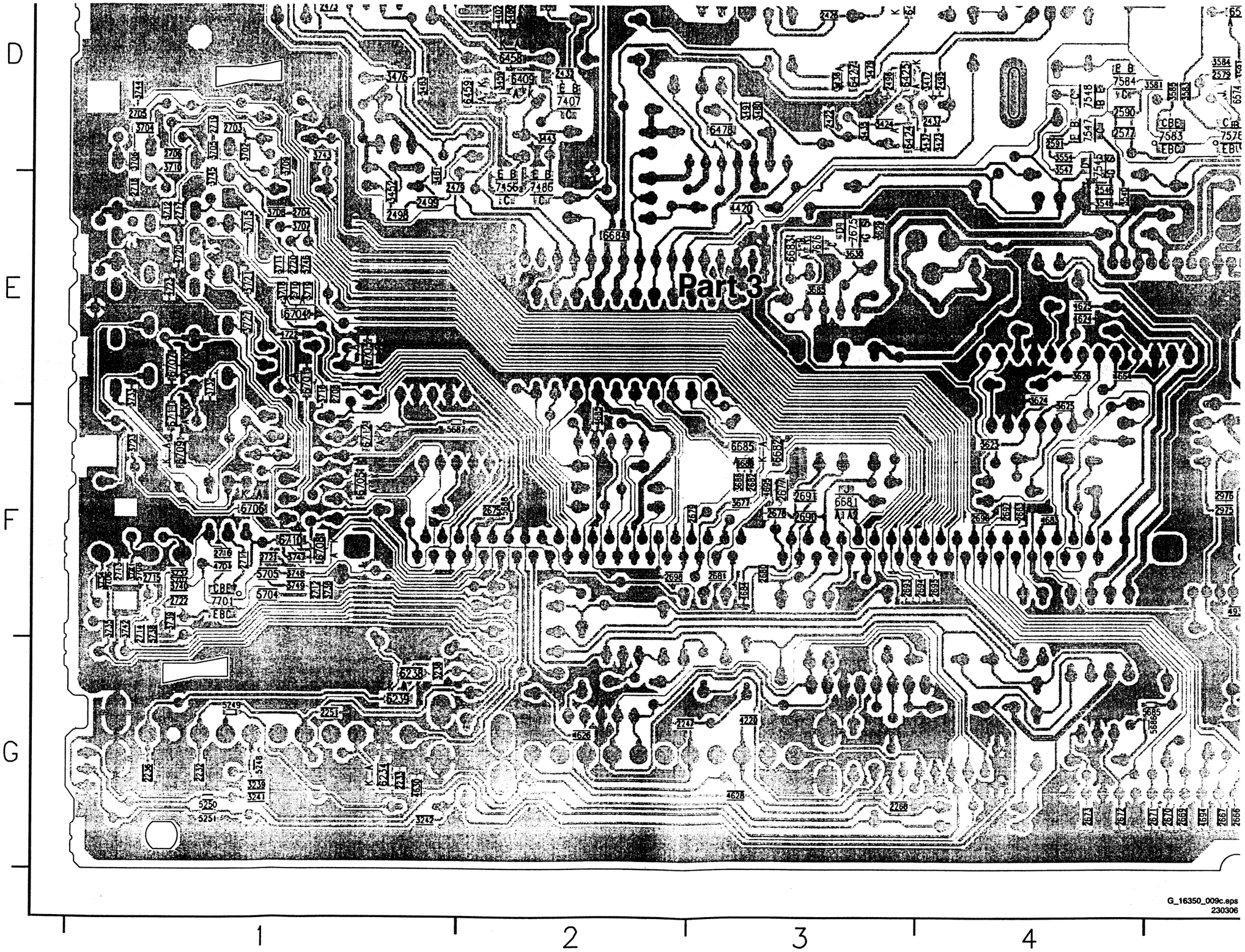
Layout LSP (Part 1 Bottom Side)



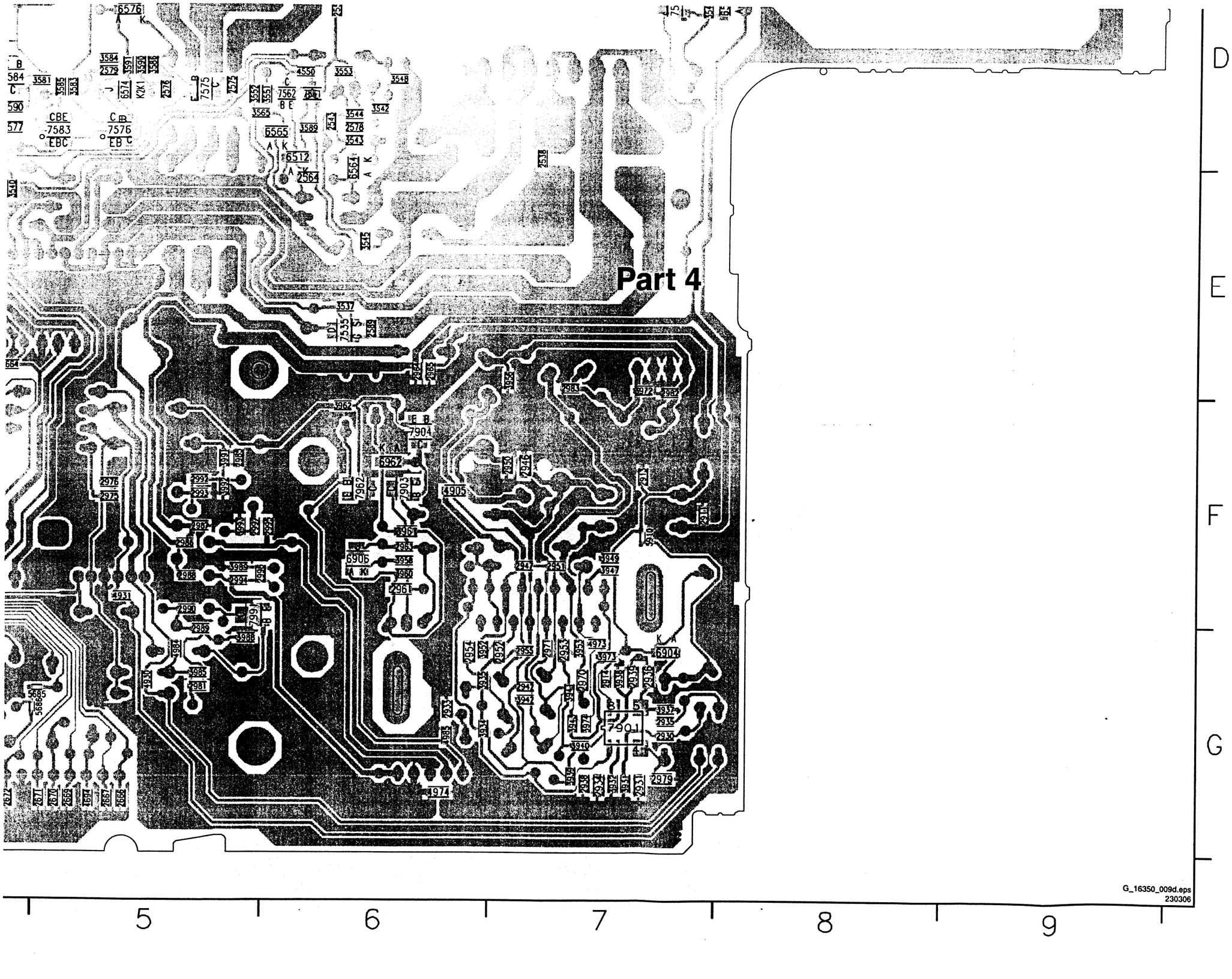
Layout LSP (Part 2 Bottom Side)



Layout LSP (Part 3 Bottom Side)

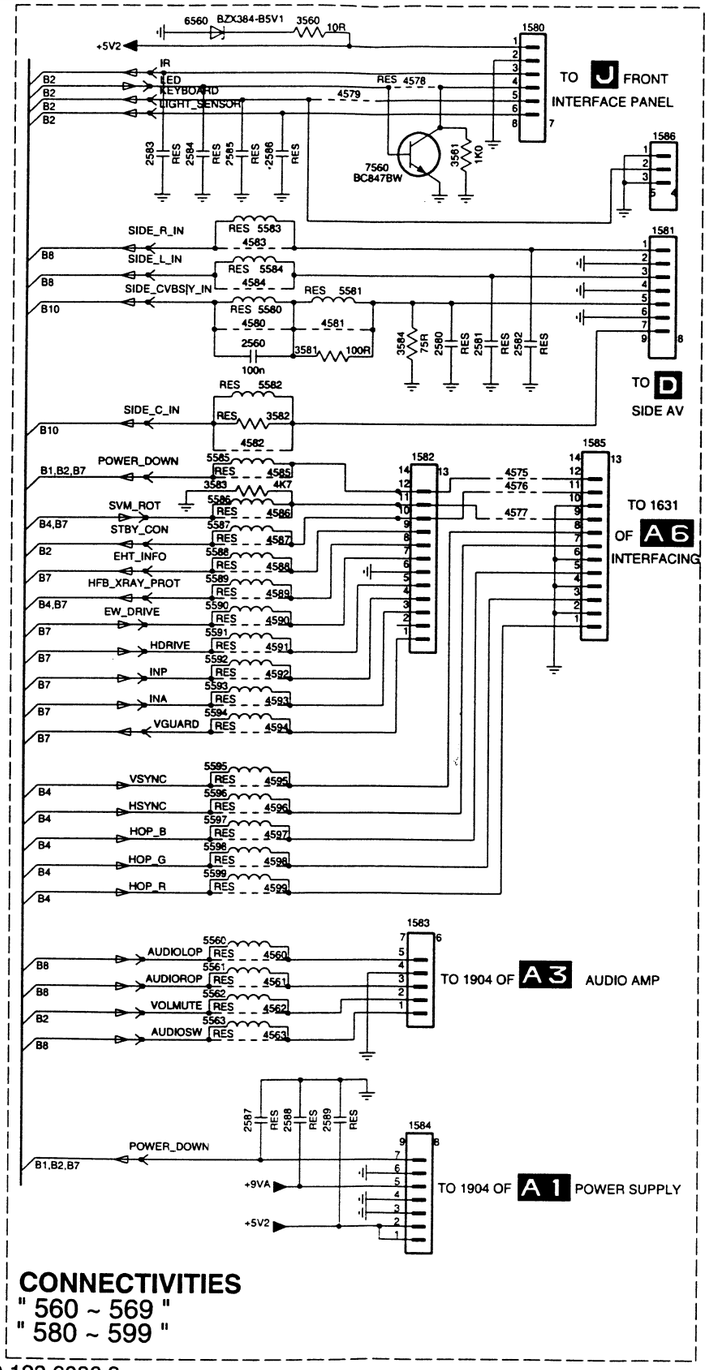


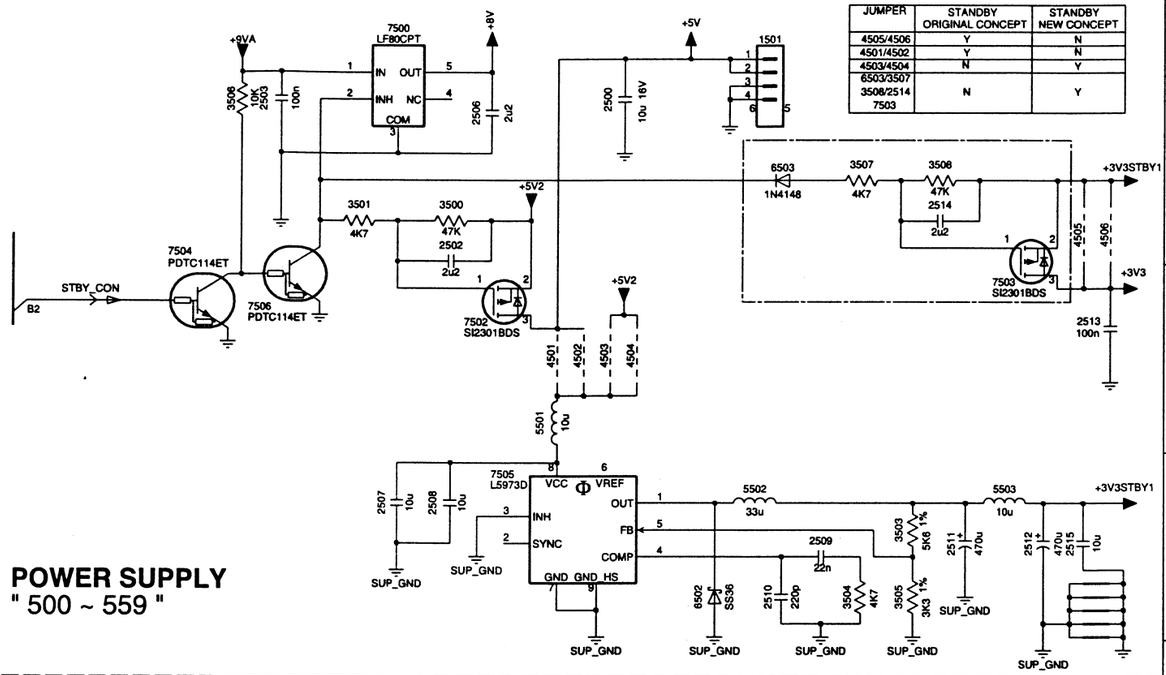
Layout LSP (Part 4 Bottom Side)



SSB: Power Supply & Connectivities

B1 POWER SUPPLY & CONNECTIVITIES





POWER SUPPLY
" 500 ~ 559 "

Screw & Shield Holes
1558 EMC HOLE
1559 EMC HOLE

3139 123 6086.3

G_16350_010.eps
230306

1501 A9 5582 C2
1558 F5 5583 B2
1559 G5 5584 B2
1580 A3 5585 C2
1581 B4 5586 C2
1582 C3 5587 C2
1583 E3 5588 C2
1584 F3 5589 D2
1585 C4 5590 D2
1586 A4 5591 D2
2500 B8 5592 D2
2502 B7 5593 D2
2503 B6 5594 D2
2506 B7 5595 E2
2507 D7 5596 E2
2508 D7 5597 E2
2509 D9 5598 E2
2510 D9 5599 E2
2511 D10 6502 D8
2512 D10 6503 B9
2513 C10 6560 A1
2514 B10 7500 A7
2515 D10 7502 C7
2560 B2 7503 C10
2580 B3 7504 B5
2581 B3 7505 D7
2582 B3 7506 C6
2583 A1 7560 A2
2584 A1
2585 A2
2586 A2
2587 F2
2588 F2
2589 F2
3500 B7
3501 B6
3503 D9
3504 D9
3505 D9
3506 B6
3507 B9
3508 B10
3560 A2
3561 A3
3581 B2
3582 C2
3583 C2
3584 B3
4501 C8
4502 C8
4503 C8
4504 C8
4505 B10
4506 B10
4560 F2
4561 F2
4562 F2
4563 F2
4575 C3
4576 C3
4577 C3
4578 A3
4579 A2
4580 B2
4581 B2
4582 C2
4583 B2
4584 B2
4585 C2
4586 C2
4587 C2
4588 C2
4589 D2
4590 D2
4591 D2
4592 D2
4593 D2
4594 D2
4595 E2
4596 E2
4597 E2
4598 E2
4599 E2
5501 C7
5502 D9
5503 D10
5560 E2
5561 F2
5562 F2
5563 F2
5580 B2
5581 B2

SSB: Micro Processor

B2 MICROPROCESSOR

B2

7201 M30620SPGP

7205 M29W400DT-55N6 EPROM 512Kx8/256Kx16

7203 M24C64-WMN6 (8Kx8) EEPROM

7207 PCA9515DP

7202 PST596J

7204-1 74HC02D

7204-2 74HC02D

7204-3 74HC02D

7204-4 74HC02D

7206-1 BC847BPN

7206-2 BC847BPN

1205 858-PH-K

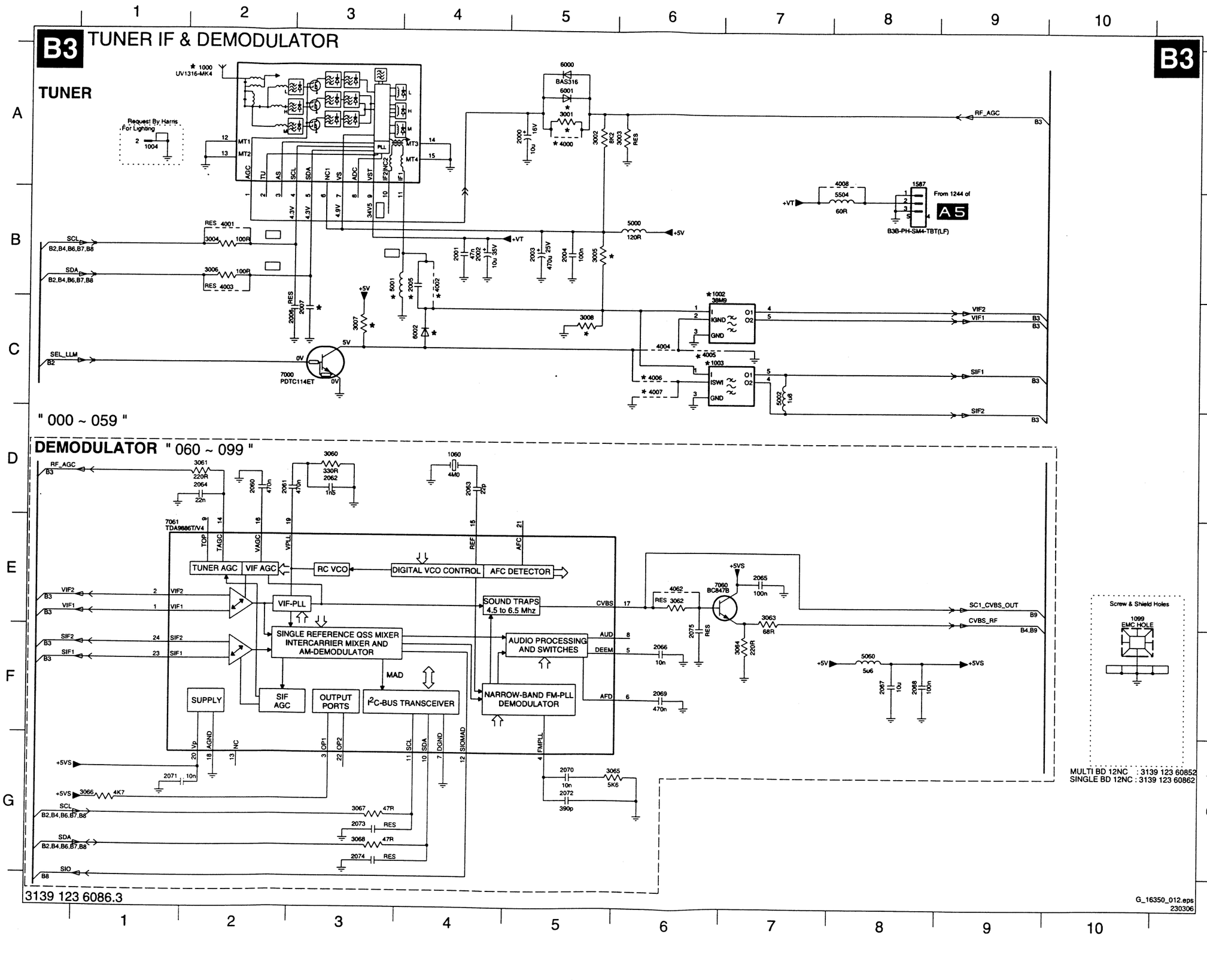
1285

3139 123 6086.3

G_16350_011.eps 230306

1201	A3	3261-3	B8
1205	D10	3261-4	B8
1285	G6	3262-1	B8
2201	A1	3262-2	B8
2202	A2	3262-3	B8
2203	A2	3263-1	A11
2204	D5	3263-2	A11
2205	D7	3263-3	A11
2206	D7	3263-4	A11
2207	E9	3264-1	A11
2208	E9	3264-2	A11
2209	F7	3264-3	A11
2210	F7	3264-4	A11
2211	G1	3265	A5
2212	G1	3266	C2
2213	A10	3267	C2
2214	A10	3268	B1
2215	B2	3269	A5
2216	A4	3270	B8
2217	C8	3271	C5
2220	E8	3272	B7
2221	E9	3273	C3
2222	A3	3274	C3
2223	A4	3275	C3
3201	C3	3276	C5
3202	C3	3277	B5
3203	C3	3278	B5
3204	B5	3279	B5
3205	B5	3280	D5
3206	A5	3281	D5
3207	A5	3282	D5
3208	A5	3283	E5
3209	A5	3284	G3
3210	A5	3285	G3
3211	A3	3286	F3
3212	A2	3287	F5
3213	D5	3288	B5
3214	D5	3289	B8
3215	F5	3290	A5
3216	F5	3291	B5
3217	E5	3292	B5
3218	E5	3293	G3
3219	E6	3294	C2
3220	F5	4202	F3
3221	E5	4203	G2
3222	E5	4204	G8
3223	B3	4205	G8
3224	A3	5216	A4
3225	A2	6201	D7
3226	B3	6206	C3
3227	E9	6207	B8
3228	E9	6208	C3
3229	D9	6212	A2
3230	D9	7201	A4
3231	D9	7202	A1
3232	D8	7203	D3
3233	G5	7204-1	G1
3234	D5	7204-2	G1
3236	G6	7204-3	G3
3237	G5	7204-4	G2
3238	G5	7205	A3
3239	G6	7206-1	C7
3240	F6	7206-2	B7
3241	F7	7207	F1
3242	F6		
3243	F7		
3244	F5		
3245	F5		
3246	F5		
3247	G3		
3248	G3		
3249	G3		
3250	F3		
3251	F3		
3252	F3		
3253	G3		
3254	C9		
3255	D5		
3256	C8		
3257	G3		
3258-1	B11		
3258-2	A8		
3258-3	A8		
3258-4	A8		
3259-1	A8		
3259-2	A8		
3259-3	A8		
3259-4	A8		
3260-1	A8		
3260-2	A8		
3260-3	B8		
3260-4	B8		
3261-1	B8		
3261-2	B8		

SSB: Tuner IF & Demodulator



1000 A2
1002 B6
1003 C6
1004 A1
1060 D4
1099 E10
1587 A8
2000 A5
2001 B4
2002 B4
2003 B5
2004 B5
2005 B4
2006 C3
2007 C3
2060 D2
2061 D2
2062 D3
2063 D4
2064 D2
2065 E7
2066 F6
2067 F8
2068 F8
2069 F6
2070 G5
2071 G1
2072 G5
2073 G3
2074 G3
2075 F6
3001 A5
3002 A5
3003 A5
3004 B2
3005 B5
3006 B2
3007 C3
3008 C5
3060 D3
3061 D2
3062 E6
3063 E7
3064 F7
3065 G6
3066 G1
3067 G3
3068 G3
4000 A5
4001 B2
4002 B4
4003 B2
4004 C6
4005 C6
4006 C6
4007 C6
4008 A8
4062 E6
5000 B6
5001 B3
5002 C7
5060 F8
5504 B8
6000 A5
6001 A5
6002 C4
7000 C2
7060 E6
7061 E1

SSB: SVPEX42

B4 SVPEX42

Provision for Pacific 3

SUPPLY_ANA

SUPPLY_DIG

ANALOG_IFC

DDP_CRT

CPU

MEMORY

DIGITAL_IFC

3139 123 6086.3

G_16350_013.eps 230306

1721 A3 2789 A8
1737 A1 3721 B2
2650 G1 3722 C1
2651 G1 3723 C1
2652 G1 3724 D1
2653 G1 3725 C3
2654 G1 3726 C3
2655 G1 3727 C4
2656 G1 3728 D4
2657 G2 3729 D4
2658 G2 3730 B3
2659 G2 3738 F7
2660 G2 3739 D7
2661 G3 3740 D7
2662 G3 3741 D7
2663 G3 3742 D7
2664 G3 3743 E8
2665 G3 3744 E8
2666 G4 3745 F8
2667 B2 3746 F8
2668 B2 3747-1 D5
2669 B2 3747-2 E5
2670 B3 3747-3 E5
2720 B2 3747-4 E5
2721 B2 3748-1 E5
2722 B3 3748-2 E5
2723 A3 3748-3 E5
2724 A3 3748-4 E5
2725 C1 3749-1 E5
2726 C1 3749-2 E5
2727 D1 3749-3 E5
2728 D1 3749-4 E5
2729 D1 3750-1 E5
2730 C4 3750-2 E5
2731 C4 3750-3 F5
2732 C4 3750-4 F5
2733 C4 3751 A2
2734 D4 3752 C1
2735 D1 3753 B1
2736 E2 3754 B1
2738 D3 3755 B1
2739 D3 3756 B1
2740 E3 3757 A8
2741 D4 3758 A8
2742 D4 3759 B8
2743 E4 3760 B8
2744 D4 3761 E8
2745 D5 4732 C1
2746 E5 4733 C1
2747 E1 4734 C1
2748 E1 4735 D1
2749 E1 4736 D1
2750 E2 4737 A1
2751 E2 4738 A1
2752 E3 4739 A1
2753 E3 4740 B1
2754 E4 4741 B1
2755 E1 5721 A5
2756 E1 5722 A5
2757 E1 5723 A4
2758 E1 5724 B4
2759 G1 5725 A6
2760 G1 5726 A7
2761 G1 5727 A7
2762 G1 5728 B7
2763 G1 5729 D1
2764 G1 5730 E2
2765 G1 5731 E3
2766 G2 5732 C1
2767 G2 5733 C1
2768 G2 5734 D1
2769 G2 5735 D1
2770 G3 5736 D1
2771 F7 7721-1 A3
2772 F7 7721-2 C2
2773 A5 7721-3 E10
2774 A5 7721-4 D6
2775 A5 7721-5 A9
2776 A5 7721-6 B5
2777 A4 7721-7 F1
2778 A5
2779 B4
2780 B5
2781 A6
2782 A6
2783 A7
2784 A7
2785 A7
2786 A7
2787 B7
2788 B7

SSB: DDR DRAM & Supply

B5 DDR DRAM & SUPPLY

JUMPER	STANDBY ORIGINAL CONCEPT	STANDBY NEW CONCEPT
4701 4702	N	Y

SDRAM 1M X 32 X 4

DDR VDDMQ / VDDM de-caps

SDRAM Decoupling Capacitors

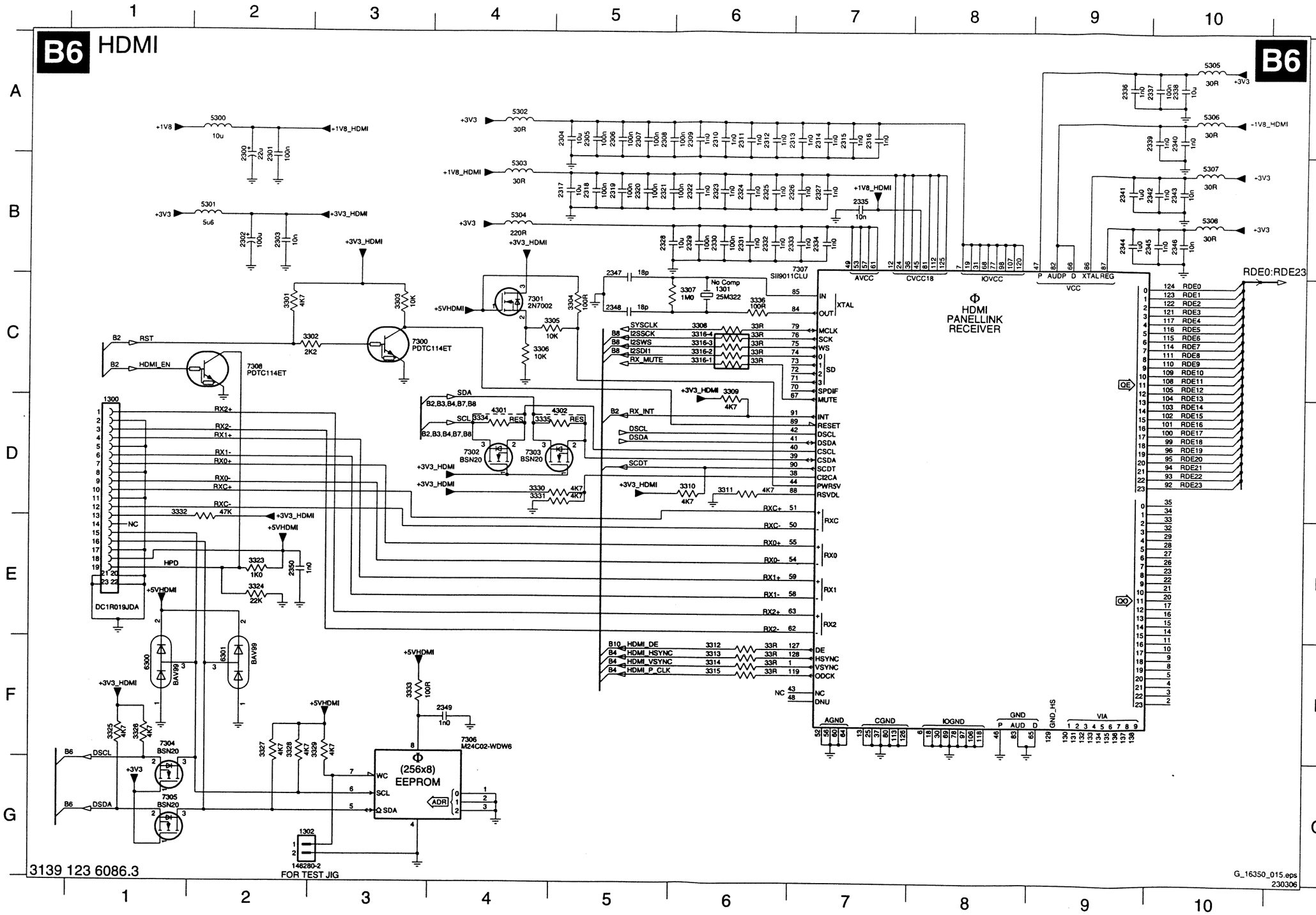
2218 D10 3714-4 E5
2219 E10 3715 C3
2680 E2 3716 C3
2681 E3 3717 C3
2682 E3 3790 B3
2701 A2 3791 B3
2702 B2 3792 B3
2703 B2 3793 B3
2704 E1 4701 A8
2705 E1 4702 A8
2706 E1 5701 B8
2707 E1 5702 B10
2708 E1 5703 D10
2709 E1 5704 D10
2710 E2 5705 E10
2711 E2 7701 B3
2712 E2 7702 A9
2713 E1 7703 B9
2714 E2 7704 D9
2715 E2
2716 E1
2717 E1
2718 E1
2719 E2
2737 E10
2790 A8
2791 A8
2792 C8
2794 C9
2795 C10
2796 C10
2797 D8
2798 D9
3701 A3
3702 B3
3703 B2
3704 B2
3705 E3
3706 E6
3707-1 C5
3707-2 C5
3707-3 C5
3707-4 C5
3708-1 C5
3708-2 C5
3708-3 C5
3708-4 C5
3709-1 C5
3709-2 C5
3709-3 C5
3709-4 C5
3710-1 C5
3710-2 D5
3710-3 D5
3710-4 D5
3711-1 D5
3711-2 D5
3711-3 D5
3711-4 D5
3712-1 D5
3712-2 D5
3712-3 D5
3712-4 D5
3713-1 D5
3713-2 D5
3713-3 D5
3713-4 E5
3714-1 E5
3714-2 E5
3714-3 E5

G_16350_014.eps
230306

3139 123 6086.3

SSB: HDMI

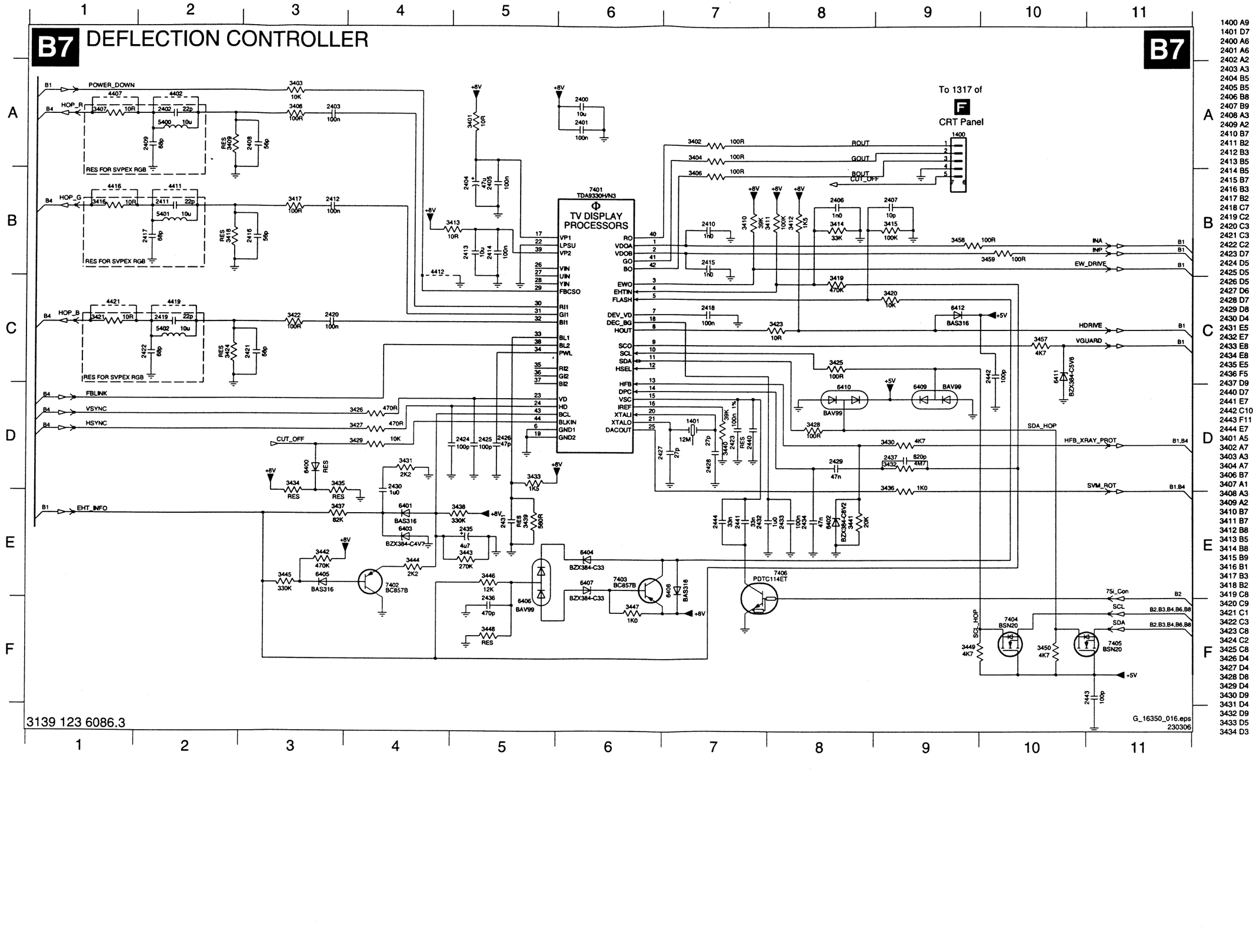
B6 HDMI



1300 D1 3334 D4
1301 C6 3335 D4
1302 G2 3336 C6
2300 B2 4301 D4
2301 B2 4302 D5
2302 B2 5300 A2
2303 B2 5301 B2
2304 A5 5302 A4
2305 A5 5303 B4
2306 A5 5304 B4
2307 A5 5305 A10
2308 A5 5306 A10
2309 A6 5307 B10
2310 A6 5308 B10
2311 A6 6300 F1
2312 A6 6301 F2
2313 A6 7300 C3
2314 A7 7301 C4
2315 A7 7302 D4
2316 A7 7303 D4
2317 B5 7304 F1
2318 B5 7305 G1
2319 B5 7306 F4
2320 B5 7307 B7
2321 B5 7308 C2
2322 B6
2323 B6
2324 B6
2325 B6
2326 B6
2327 B7
2328 B5
2329 B6
2330 B6
2331 B6
2332 B6
2333 B6
2334 B7
2335 B7
2336 A9
2337 A9
2338 A10
2339 A9
2340 A10
2341 B9
2342 B9
2343 B10
2344 B9
2345 B9
2346 B10
2347 B5
2348 C5
2349 F4
2350 E2
3301 C2
3302 C2
3303 C3
3304 C5
3305 C4
3306 C4
3307 C6
3308 C6
3309 C6
3310 D6
3311 D6
3312 F6
3313 F6
3314 F6
3315 F6
3316-1 C6
3316-2 C6
3316-3 C6
3316-4 C6
3323 E2
3324 E2
3325 F1
3326 F1
3327 F2
3328 F2
3329 F3
3330 D4
3331 D4
3332 D1
3333 F3

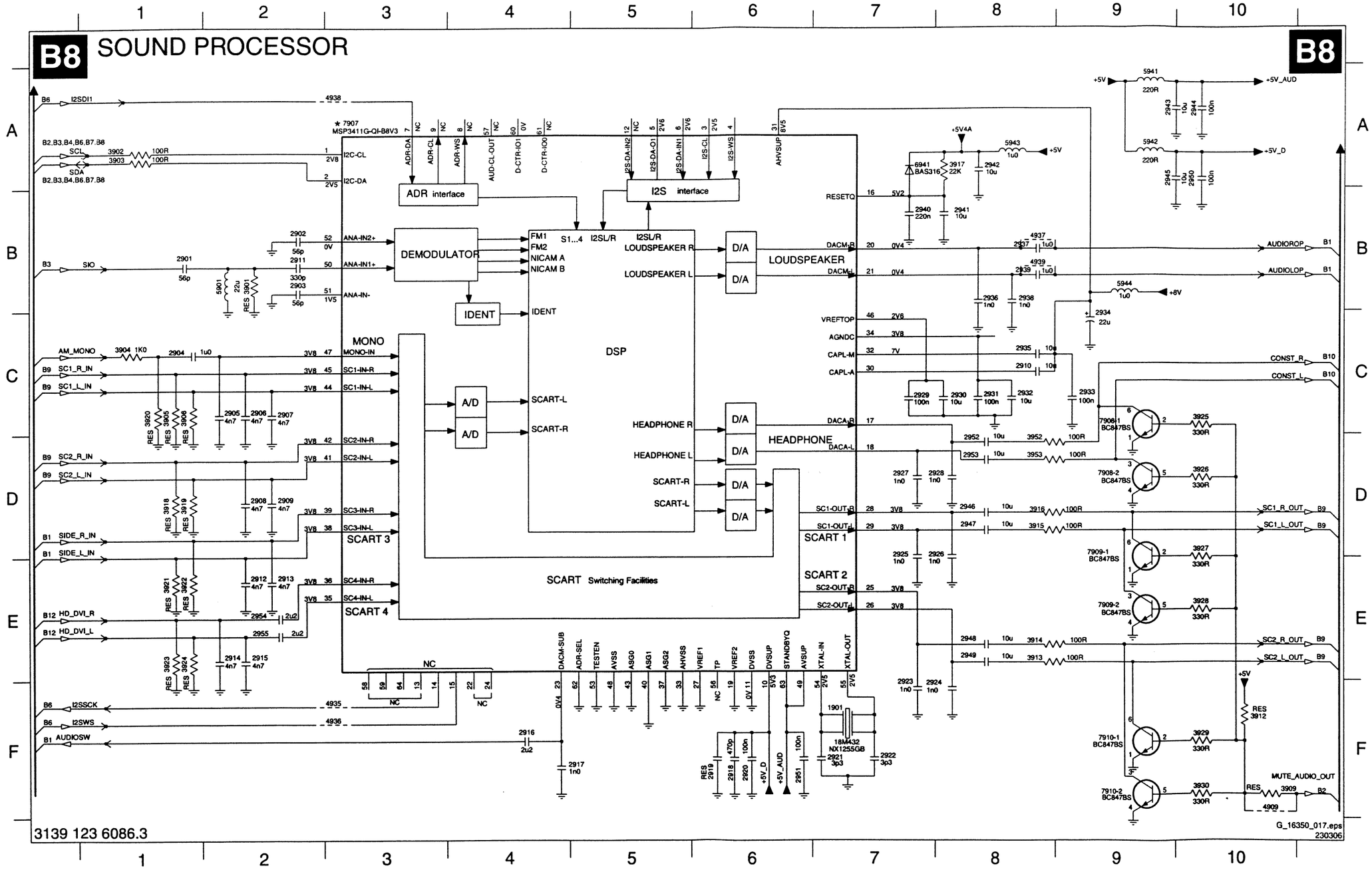
SSB: Deflection Controller

B7 DEFLECTION CONTROLLER



1400	A9	3435	D3
1401	D7	3436	D9
2400	A6	3437	E3
2401	A6	3438	E5
2402	A2	3439	E5
2403	A3	3440	D7
2404	B5	3441	E8
2405	B5	3442	E3
2406	B8	3443	E5
2407	B9	3444	E4
2408	A3	3445	E3
2409	A2	3446	E5
2410	B7	3447	F6
2411	B2	3448	F5
2412	B3	3449	F9
2413	B5	3450	F10
2414	B5	3457	C10
2415	B7	3458	B9
2416	B3	3459	B10
2417	B2	4402	A2
2418	C7	4407	A1
2419	C2	4411	B2
2420	C3	4412	B4
2421	C3	4416	B1
2422	C2	4419	C1
2423	D7	4421	C3
2424	D5	5400	A2
2425	D5	5401	B2
2426	D5	5402	C2
2427	D6	6400	D3
2428	D7	6401	E4
2429	D8	6402	E8
2430	D4	6403	E4
2431	E5	6404	E6
2432	E7	6405	E3
2433	E8	6406	F5
2434	E8	6407	E6
2435	E5	6408	E7
2436	F5	6409	C9
2437	D9	6410	D8
2440	D7	6411	C10
2441	E7	6412	C9
2442	C10	7401	B6
2443	F11	7402	E4
2444	E7	7403	E6
3401	A5	7404	F10
3402	A7	7405	F11
3403	A3	7406	E8
3404	A7		
3406	B7		
3407	A1		
3408	A3		
3409	A2		
3410	B7		
3411	B7		
3412	B8		
3413	B5		
3414	B8		
3415	B9		
3416	B1		
3417	B3		
3418	B2		
3419	C8		
3420	C9		
3421	C1		
3422	C3		
3423	C8		
3424	C2		
3425	C8		
3426	D4		
3427	D4		
3428	D8		
3429	D4		
3430	D9		
3431	D4		
3432	D9		
3433	D5		
3434	D3		

SSB: Sound Processor



1901 F7 3925 C10
2901 B1 3926 D10
2902 B2 3927 D10
2903 B2 3928 E10
2904 C1 3929 F10
2905 C2 3930 F10
2906 C2 3952 D8
2907 C2 3953 D8
2908 D2 4909 F10
2909 D2 4935 F3
2910 C8 4936 F3
2911 B2 4937 B8
2912 E2 4938 A3
2913 E2 4939 B8
2914 E2 5901 B2
2915 E2 5941 A9
2916 F4 5942 A9
2917 F5 5943 A8
2918 F6 5944 B9
2919 F6 6941 A7
2920 F6 7907 A3
2921 F7 7908-1 C9
2922 F7 7908-2 D9
2923 E7 7909-1 D9
2924 E7 7909-2 E9
2925 D7 7910-1 F9
2926 D7 7910-2 F9
2927 D7
2928 D8
2929 C7
2930 C8
2931 C8
2932 C8
2933 C9
2934 B9
2935 C8
2936 B8
2937 B8
2938 B8
2939 B8
2940 B7
2941 B8
2942 A8
2943 A9
2944 A10
2945 A9
2946 D8
2947 D8
2948 E8
2949 E8
2950 A10
2951 F6
2952 D8
2953 D8
2954 E2
2955 E2
3901 B2
3902 A1
3903 A1
3904 C1
3905 C1
3906 C1
3909 F10
3912 F10
3913 E8
3914 E8
3915 D8
3916 D8
3917 A8
3918 D1
3919 D1
3920 C1
3921 E1
3922 E1
3923 E1
3924 E1

SSB: SCART Analogue I/O

B9 SCART ANALOGUE I/O

B9

SCART 1

1150-1 ROW_A

Audio-R_out 1A
Audio-R_in 2A
Audio-L_out 3A
4A
5A
Audio-L_in 6A
RGB-B_in 7A
Function_Sw 8A
9A
10A
RGB-G_in 11A
12A
13A
14A
RGB-R_in 15A
RGB-BL_in 16A
17A
18A
Terr_CVBS_out 19A
Video_in 20A
21A

PPTV/90

F151 S150 2172 RES 3170 150R I153 2150 330p 3171 220K ★4154 SC1_R_OUT B8
F152 S151 2173 RES 3172 150R I154 2151 180p 3173 47K 2155 2u2 SC1_R_IN B8
F153 S152 2174 RES 3174 150R I155 2152 330p 3175 220K ★4156 SC1_L_OUT B8
F169
F154 S153 2175 RES 3176 150R I156 2153 180p 3177 47K 2157 2u2 SC1_L_IN B8
F155
F158 S154 6152 RES 3156 75R BIN B1
S174
F156 S155 6153 RES 3157 75R GIN B1
S175
3178 75R
F157 S156 6154 RES 3158 75R RIN B1
F170
3184 27K I157 3185 6K8 SC1_STATUS B2
F159 S157
F160
F168 S158 SC1_FBL B10
+5V 3187 47R I158 2176 100n I160 4190 3190 RES SC1_CVBS_OUT B3
7150 BC847B I159
3188 68R 3189 1K0 2178 RES
S159
3192 100R SC1_CVBS_IN B4
S180 2171 EMC RES 6150 RES 3191 75R

Screw & Shield Holes
1196 EMC HOLE

SCART 2

1150-2 ROW_B

Audio-R_out 1B
Audio-R_in 2B
Audio-L_out 3B
4B
5B
Audio-L_in 6B
RGB-B_in 7B
Function_Sw 8B
9B
10B
RGB-G_in 11B
12B
13B
14B
RGB-R/YC-C_in 15B
16B
17B
18B
CVBS_out 19B
Video/YC-Y_in 20B
21B

PPTV/90

F161 S161 2158 RES 3193 150R I161 2162 330p 3194 220K 4166 SC2_R_OUT B8
F162 S162 2159 RES 3195 150R I162 2163 180p 3196 47K 2167 2u2 SC2_R_IN B8
F163 S163 2160 RES 3197 150R I163 2164 330p 3198 220K 4168 SC2_L_OUT B8
F171
F164 S164 2161 RES 3199 150R I164 2165 180p RES 3160 4160 2169 2u2 SC2_L_IN B8
S169
F165
S170
S171 3161 27K I165 RES 3159 4159 SC2_STATUS B2
S172
S165
F166 S166 3163 75R 3162 100R SC2_C_IN B10
S173
F172
+5V 3186 47R I166 2177 100n
7151 BC847BW I167 4183 3183 RES SC2_CVBS_OUT B10
F167
F173 3164 68R I168 3165 1K0 2179 RES
S167
S168 2170 EMC RES 6151 RES 3169 75R 3168 100R 2168 100n I152 SC2_CVBSY_IN B10

1150-1 B1 6151 E8
1150-2 B6 6152 C2
1198 F4 6153 C2
2150 A3 6154 D2
2151 B3 7150 E3
2152 B3 7151 D9
2153 C3 F151 A2
2155 B4 F152 B2
2157 B4 F153 B2
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2160 B8 F156 C3
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2164 B9 F160 D2
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2167 A10 F162 A7
2168 E9 F163 B7
2169 B10 F164 B7
2170 E7 F165 C7
2171 F2 F166 D7
2172 A2 F167 D7
2173 B2 F168 E3
2174 B2 F169 B2
2175 C2 F170 D1
2176 E4 F171 B7
2177 D9 F172 D6
2178 E4 F173 D7
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3161 C8 I158 E3
3162 D8 I159 E3
3163 D8 I160 E4
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3165 E8 I162 A3
3168 E9 I163 B3
3169 E8 I164 B3
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3171 A4 I166 D3
3172 B3 I167 D3
3173 B4 I168 E3
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3175 B4 S151 B2
3176 B3 S152 B2
3177 C4 S153 C2
3178 D2 S154 C2
3183 D10 S155 D2
3184 D3 S156 D2
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3186 D9 S158 E2
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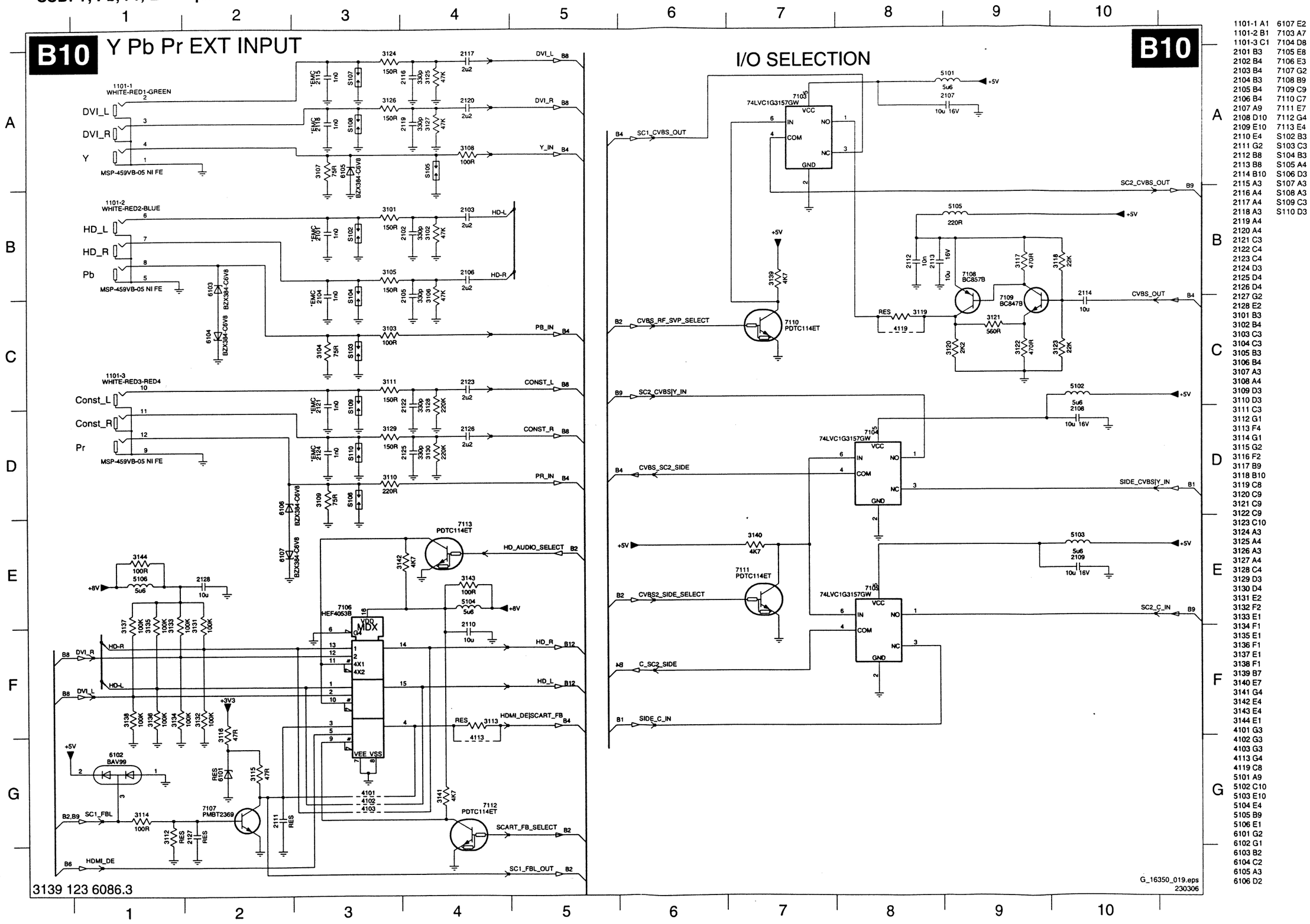

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2116 A4 S108 A3
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2118 A3 S110 D3
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3125 A4
3126 A3
3127 A4
3128 C4
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3131 E2
3132 F2
3133 E1
3134 F1
3135 E1
3136 F1
3137 E1
3138 F1
3139 B7
3140 E7
3141 G4
3142 E4
3143 E4
3144 E1
4101 G3
4102 G3
4103 G3
4113 G4
4119 C8
5101 A9
5102 C10
5103 E10
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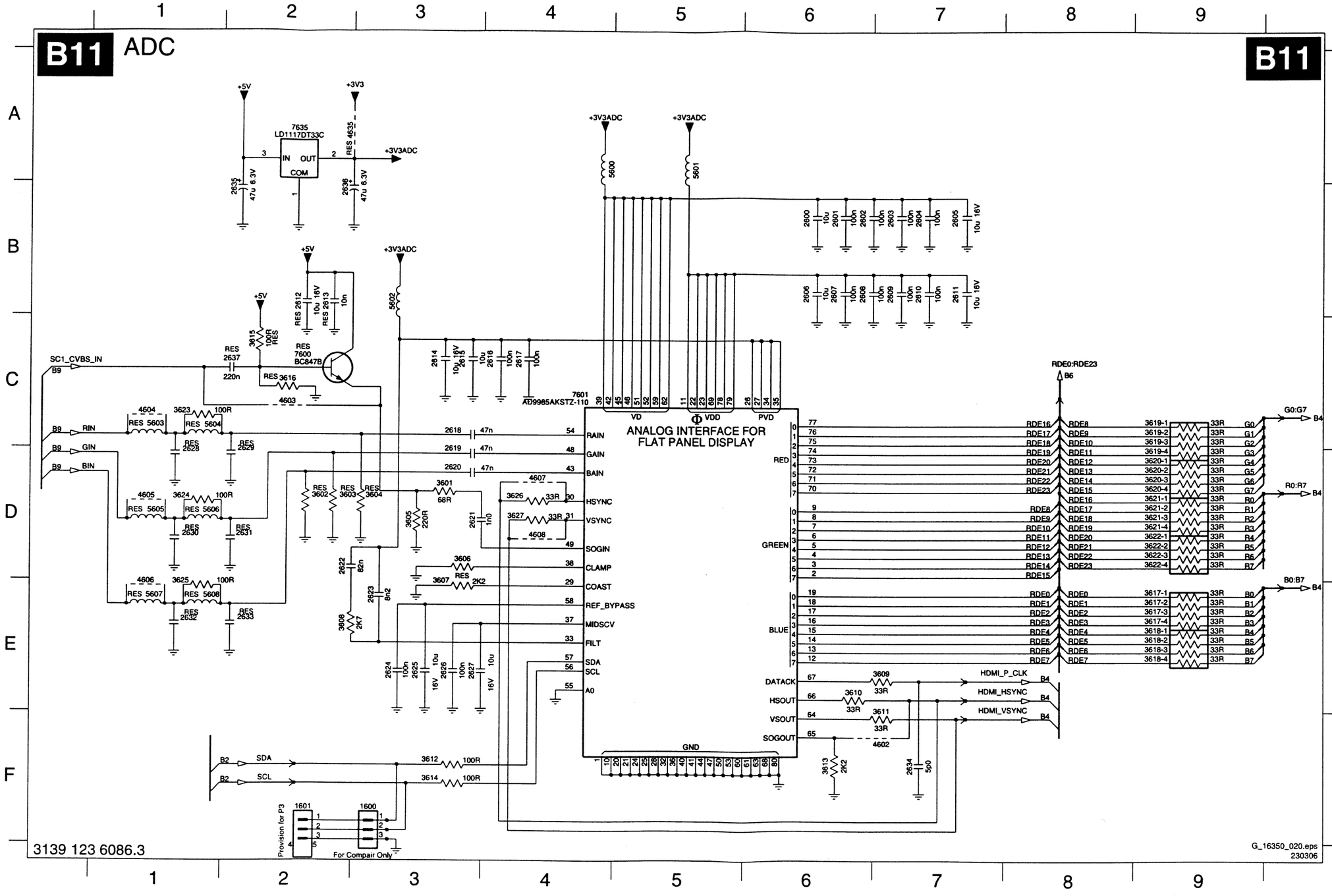

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2604 B7 3624 D1
2605 B7 3625 E1
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2613 B2 4607 D4
2614 C3 4608 D4
2615 C3 4635 A2
2616 C4 5600 A4
2617 C4 5601 A5
2618 C3 5602 B3
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2623 E3 5607 E1
2624 E3 5608 E1
2625 E3 7600 C2
2626 E3 7601 C4
2627 E3 7635 A2
2628 C1
2629 C2
2630 D1
2631 D2
2632 E1
2633 E2
2634 F7
2635 B2
2636 B2
2637 C2
3601 D3
3602 D2
3603 D2
3604 D3
3605 D3
3606 D3
3607 E3
3608 E2
3609 E7
3610 E6
3611 F7
3612 F3
3613 F6
3614 F3
3615 C2
3616 C2
3617-1 E9
3617-2 E9
3617-3 E9
3617-4 E9
3618-1 E9
3618-2 E9
3618-3 E9
3618-4 E9
3619-1 C9
3619-2 C9
3619-3 C9
3619-4 D9
3620-1 D9
3620-2 D9
3620-3 D9
3620-4 D9
3621-1 D9
3621-2 D9
3621-3 D9

SSB: HDMI Sound Switching

B12 HDMI SOUND SWITCHING

B12

+3V3
4978
+5V
7975
LD1117DT33
IN OUT COM
DAC_+3V3
2975 10u
2976 10u 16V
2977 10u 16V
2978 100n
DAC_+3V3 DAC_+3V3
3961 1R0
3962 1R0
2961 100n
2962 47u 6.3V
2963 47u 6.3V
2964 100n
7961
UDA1334BT/N2
VDDA VDDD
I2SSCK B6,B8
I2SWS B6,B8
I2SDI1 B6,B8
SYSCLK B6
BCK
WS
DATAI
DIGITAL INTERFACE
DE-EMPHASIS
INTERPOLATION FILTER
NOISE SHAPER
DAC
SFOR0
SFOR1
SYSCLK
MUTE
DEEM
PCS
VOL
VOR
VSSA VSSD VREF-DAC
HDMI_L
HDMI_R
4972
2972 2u2
3963 100R
2965 1u0
2966 10n
3964 220K
4973
2973 2u2
3965 100R
2967 1u0
2968 10n
3966 220K
2969 47u 6.3V
2970 100n
+8V
3972 100R
5972 5u6
2974 10u
5961 5u6
2971 10u 16V
7962
HEF4053B
MDX
VDD G4 VEE VSS
HD_R
HD_L
HDMI_R
HDMI_L
HD_DVI_R
HD_DVI_L
B8,B9
3967 100K
3968 100K
3969 100K
3970 100K
3971 4K7
7963
PDTC114ET
HD_AUDIO_SEL_2
B2

2961 B3
2962 B4
2963 B4
2964 B4
2965 D3
2966 D2
2967 D3
2968 E2
2969 E4
2970 E4
2971 B7
2972 D2
2973 D2
2974 B6
2975 B1
2976 B1
2977 B2
2978 B2
3961 B4
3962 B4
3963 D3
3964 D3
3965 D3
3966 E3
3967 C6
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7962 C7
7963 D6
7975 A2

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Layout SSB (Top Side)

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1002 C2 1401 B6 1737 A4 2109 C3 2209 C4 2303 D6 2400 C6 2427 B6 2512 B6 2622 D4 2667 B6 2727 C5 2767 C5 2905 B2 2923 B3 2946 B3 2964 A2 3112 D3 3201 B3 3217 C3 3230 C4 3245 C4 3260 B3 3282 C3 3316 D6 3406 C6 3439 C6 3607 D4 3620 C5 3710 B4 3728 C5 3756 B6 5606 D4
1003 C2 1501 A2 1901 B2 2111 C4 2210 C4 2335 D6 2401 C6 2428 B6 2513 B6 2623 D4 2668 B6 2728 C5 2773 C6 2906 B2 2924 B3 2947 B3 2969 A2 3113 D4 3202 B3 3218 C3 3231 C4 3246 C4 3261 B3 3284 C4 3325 D5 3412 C6 3440 B6 3608 D4 3621 C5 3711 A5 3729 C5 3902 B2 5607 D4
1004 D1 1580 B1 2000 D1 2112 C3 2211 C4 2339 D6 2404 B6 2431 C6 2514 B6 2626 D4 2669 B6 2729 C5 2774 C6 2907 B2 2925 B3 2948 B3 2970 A2 3114 D3 3203 B3 3219 C4 3232 C4 3247 C4 3262 B4 3285 C4 3326 D5 3413 C6 3449 C6 3609 D5 3622 C5 3712 A4 3730 B6 3903 B2 5608 D4
1060 C2 1581 A1 2001 C1 2113 D2 2212 C4 2340 D6 2405 B6 2435 C6 2515 B6 2628 D5 2670 B6 2730 C5 2775 C5 2908 B2 2926 B3 2949 B3 2971 A3 3115 C4 3204 C3 3220 C4 3233 C4 3248 C4 3263 C3 3287 C3 3327 D5 3423 C6 3450 C6 3610 D5 3623 D5 3713 B4 3738 C6 3904 B2 5701 B5
1101 D6 1582 A6 2002 C1 2114 C3 2214 B3 2341 D6 2410 C6 2440 B6 2587 A2 2629 D5 2701 B4 2731 C5 2776 C5 2909 B2 2927 B2 2950 B2 2974 A3 3116 C4 3205 C3 3221 C4 3236 C4 3249 C4 3264 C3 3288 C3 3328 D5 3425 C6 3503 A6 3611 D5 3624 D4 3714 B4 3747 C4 3905 A2 5703 C6
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1285 A3 1586 A1 2067 C2 2203 C3 2220 C3 2345 D5 2418 C6 2507 A6 2616 C4 2633 D4 2722 C6 2750 B5 2797 C6 2918 B2 2931 B2 2954 B2 2978 A2 3120 D3 3212 C3 3225 C3 3240 C4 3253 C4 3268 C3 3311 C5 3336 D5 3429 C6 3508 B6 3615 D4 3705 A4 3723 C5 3751 B6 3913 B3 5722 C5
1300 D5 1587 C1 2068 C2 2205 C4 2223 C3 2346 D6 2423 B6 2508 A5 2617 D4 2634 C5 2723 C6 2751 B5 2798 C6 2919 B2 2934 A3 2955 B2 3001 D1 3121 C3 3213 C3 3226 C3 3241 C4 3254 B3 3272 B3 3312 C5 3401 B6 3433 C6 3561 B1 3616 D4 3706 B5 3724 C5 3752 B6 3914 B3 5731 C5
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3922 A2 5942 B2
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3929 B3 6201 C4
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3962 A2 6409 C6
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3972 A3 7103 D3
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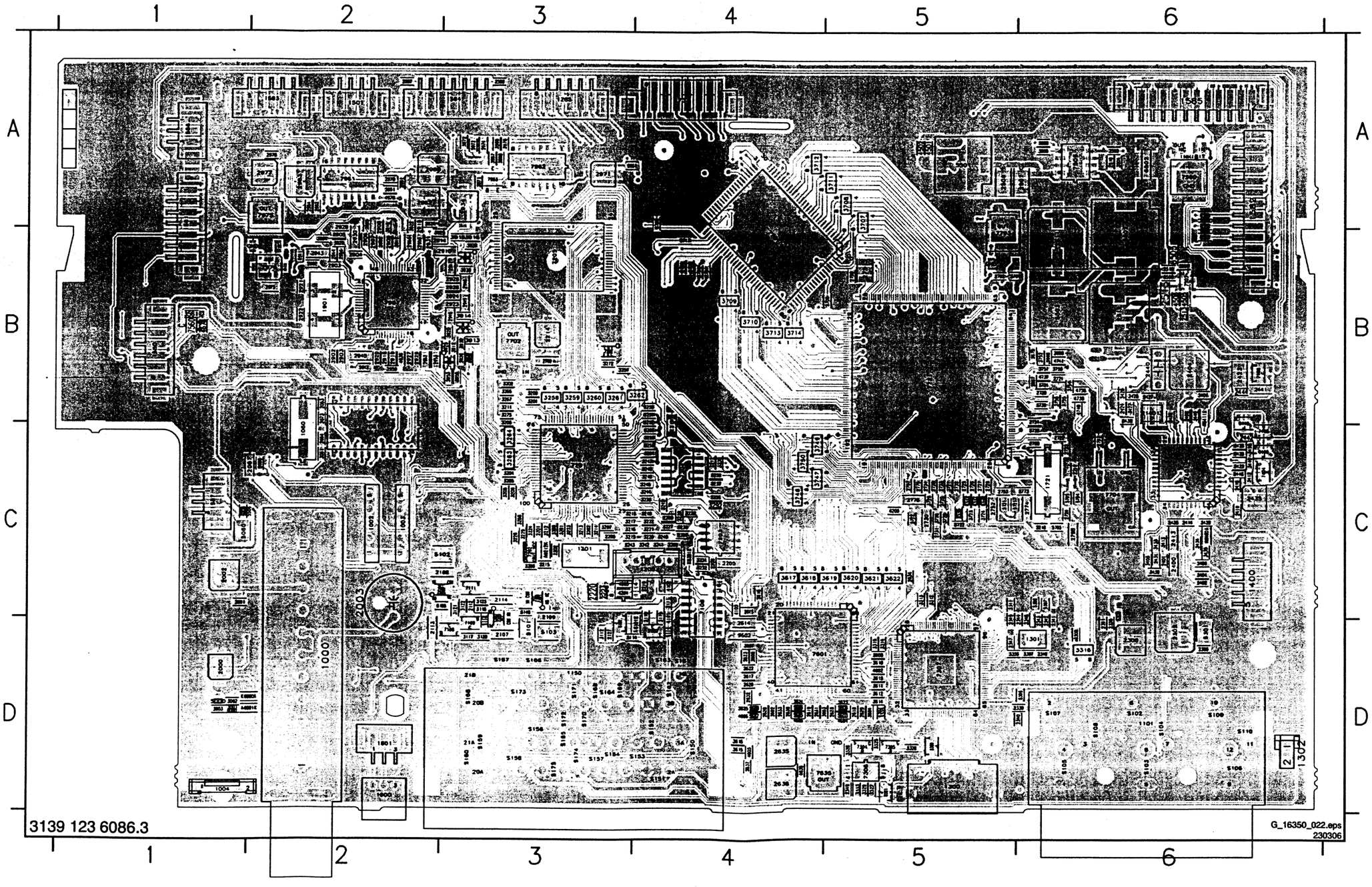

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2007 D6 2104 D1 2126 D1 2165 D4 2213 B4 2314 D2 2329 D2 2409 C1 2437 B1 2600 D2 2624 D3 2662 B2 2710 B3 2740 C2 2760 B2 2780 C2 2912 B5 2966 A4 3066 C5 3125 D1 3141 D3 3169 D5 3188 D4 3234 C4 3290 C4 3331 D2 3421 C1 3448 C1 3626 D3 3758 B2 4001 D6 4190 D4 5901 B5
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2065 C5 2115 D1 2152 D3 2170 D4 2222 C4 2318 D2 2333 D2 2417 C1 2503 A1 2604 D3 2651 B2 2666 B2 2714 B2 2744 C2 2764 B2 2784 C1 2932 A5 2973 A4 3102 D1 3129 D1 3156 D3 3173 D3 3192 D4 3270 B4 3301 C1 3408 C1 3431 C1 3500 A1 3715 B3 3790 A3 4005 C6 4407 C1 6103 D1
2066 B5 2116 D1 2153 D4 2171 D4 2304 D2 2319 D2 2334 D2 2419 C1 2506 A1 2605 D2 2652 B2 2680 B3 2715 B3 2745 C2 2765 C2 2785 C1 2933 B4 3004 D5 3103 D1 3130 D1 3157 D4 3174 D3 3193 D3 3271 B4 3302 D1 3409 C1 3432 B1 3501 A1 3716 B3 3791 A3 4006 C6 4411 C1 6104 D1
2069 B5 2117 D1 2155 D3 2172 D3 2305 D2 2320 D2 2336 D2 2420 C1 2560 B6 2606 D2 2653 B2 2681 A3 2716 B2 2746 C2 2766 C2 2786 C1 2935 B5 3005 D5 3104 D1 3131 D1 3158 D4 3175 D3 3194 C3 3274 B4 3303 D1 3410 C1 3437 C1 3506 A1 3739 C3 3792 A3 4007 C6 4412 C1 6105 D1
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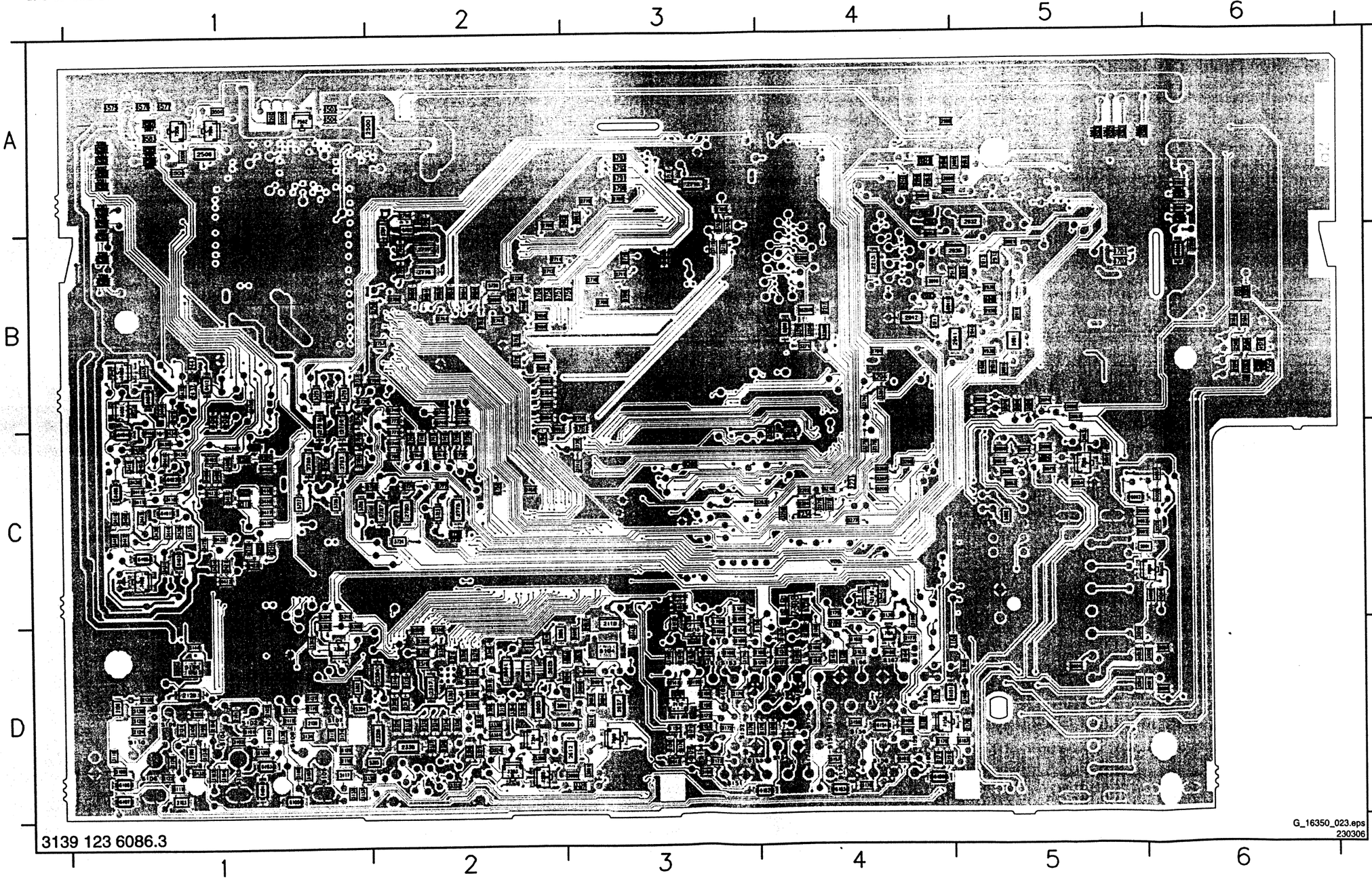

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4939 B5 7600 D3
4972 A4 S102 D1
4973 A4 S103 D1
5001 C5 S104 D1
5002 C5 S105 D1
5104 D3 S106 D1
5106 D1 S107 D1
5216 C4 S108 D1
5302 D1 S109 D1
5303 D2 S110 D1
5304 D1 S150 D3
5305 D2 S151 D3
5400 C1 S152 D3
5401 C1 S153 D3
5402 C1 S154 D4
5560 A5 S155 D4
5561 A5 S156 D4
5562 A5 S157 D4
5563 A5 S158 D4
5580 B6 S159 D4
5581 B6 S160 D4
5582 B6 S161 D3
5583 A6 S162 D3
5584 A6 S163 D3
5585 A1 S164 D4
5586 A1 S165 D4
5587 A1 S166 D4
5591 A1 S167 D4
5592 A1 S168 D4
5593 A1 S169 D4
5594 A1 S170 D4
5595 A1 S171 D4
5596 A1 S172 D4
5597 A1 S173 D4
5598 B1 S174 D4
5599 B1 S175 D4
5600 D3
5601 D2
5702 A2
5723 C2
5724 C2
5725 B1
5726 C1
5727 C1
5728 C1

Side I/O Panel (SL6)

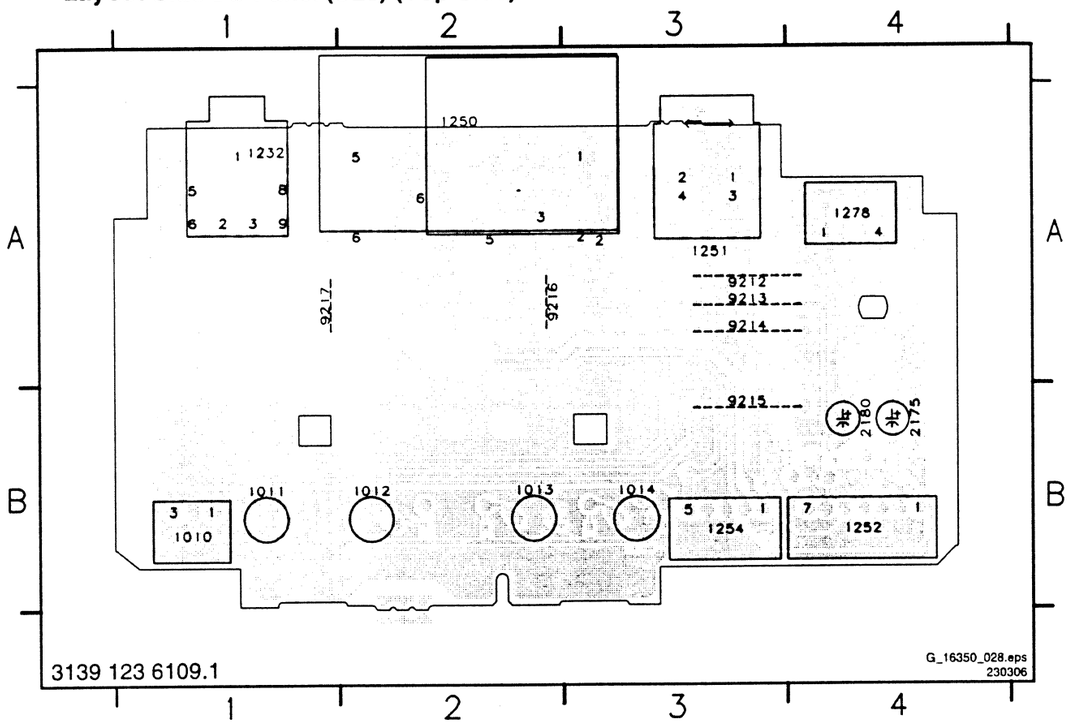
SIDE AV PANEL + HP PANEL + TOP CONTROL (SL6)

1010 D6
1011 E8
1012 E9
1013 E8
1014 E8
1016 A3
1017 B3
1018 E3
1019 D3
1020 C4
1021 C4
1022 C4
1023 C4
1232 B9
1250-1 C1
1250-2 D1
1250-3 C1
1251 A1
1252 B5
1254 A7
1277-1 C1
1277-2 D1
1278 A10
2171 E4
2172 D4
2173 D3
2174 E3
2175 C4
2176 B8
2178 B8
2180 D4
2181 C8
3010 D7
3011 D8
3012 D8
3013 D8
3015 D9
3150 E3
3151 D3
3152 D3
3153 C3
3154 B2
3156 B8
3157 B8
3158 A3
3159 A4
3160 B4
3161 C8
4180 B2
4181 E4
4182 C4
4183 D2
4184 C6
4185 B4
4186 A4
6161 B3

1251 YKF51-8304
Video_Gnd
4186 3159 100R
1016
3158 75R
4180
3154 75R
4185 3160 100R
1017
6161 BZX384-C6V8
1020 1021 1022 1023
1252
TO 1581 OF B1 SSB
2175 2u2 50V
4182 RES
4184
1277-1
VIDEO IN
1250-1
YELLOW
1250-3
RIGHT
RED
3153 22K
1019
2173 330p
3152 47K
2172 330p
4183 RES
1277-2
LEFT
1250-2
WHITE
3151 22K
1018
2174 330p
3150 47K
2171 330p
2180 2u2 50V
4181 RES
A
TO 1911 OF LSP
1254
3156 820R
3157 820R
HEADPHONE
2178 470p
2176 470p
1232
1278
TO SPEAKER
3161 39K
2181 1u0
TO 1586 OF B1 SSB
1010
3010 RES
KEY_PROTN
3011 150R
3012 390R
3013 1K8
3015 820R
1013 SKONAB channel+
1014 SKONAB channel-
1011 SKONAB volume+
1012 SKONAB volume-

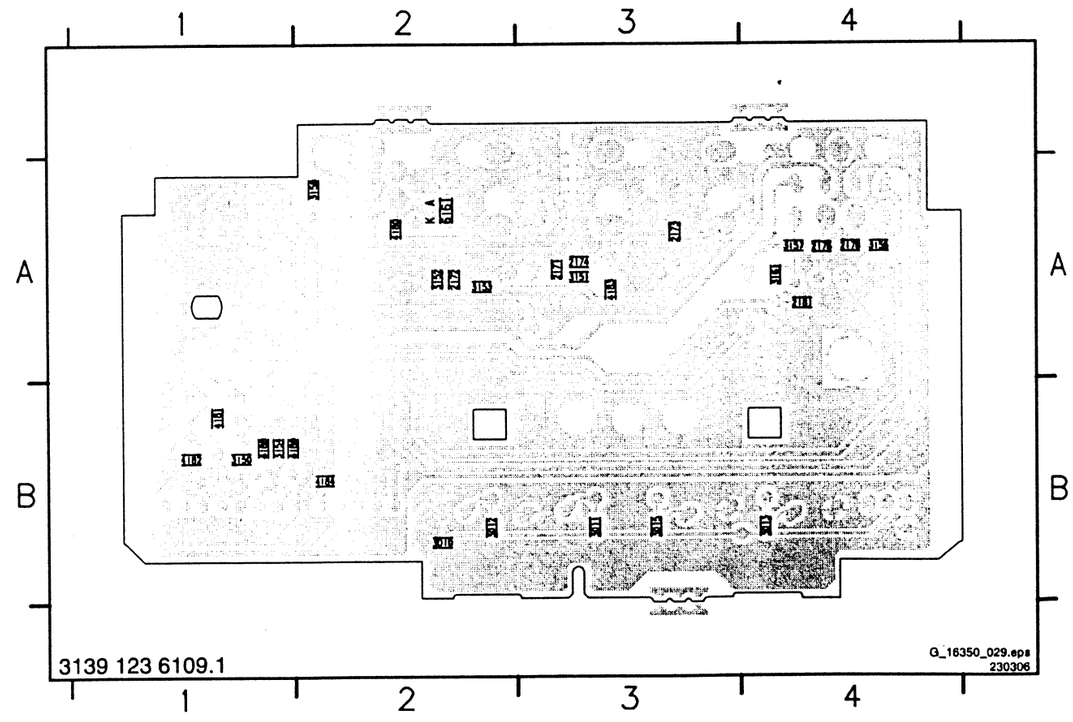
3139 123 6109.1
G_16350_027.eps
230306

Layout Side I/O Panel (SL6) (Top Side)



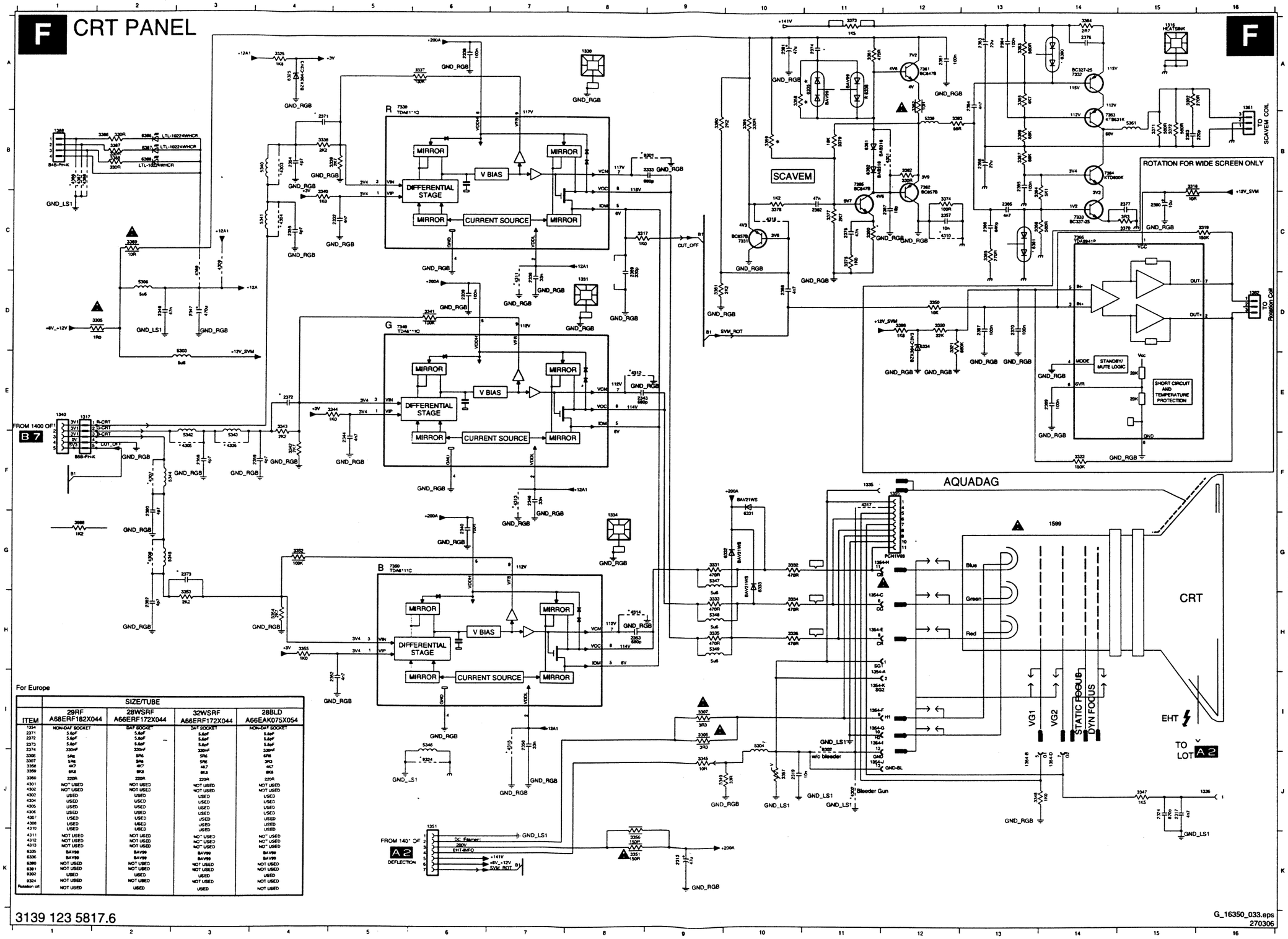
1010 B1
1011 B1
1012 B2
1013 B2
1014 B3
1232 A1
1250 A2
1251 A3
1252 B4
1254 B3
1277 A2
1278 A4
2175 B4
2180 B4
9212 A3
9213 A3
9214 A3
9215 B3
9216 A2
9217 A1

Layout Side I/O Panel (SL6) (Bottom Side)



2171 A3
2172 A2
2173 A3
2174 A3
2176 A4
2178 A4
2181 A4
3010 B2
3011 B3
3012 B2
3013 B4
3015 B3
3150 B1
3151 A3
3152 A2
3153 A2
3154 B1
3156 A4
3157 A4
3158 A2
3159 B1
3160 B1
3161 A4
4180 A2
4181 B1
4182 B1
4183 A3
4184 B2
4185 B1
4186 B1
6161 A2

CRT Panel



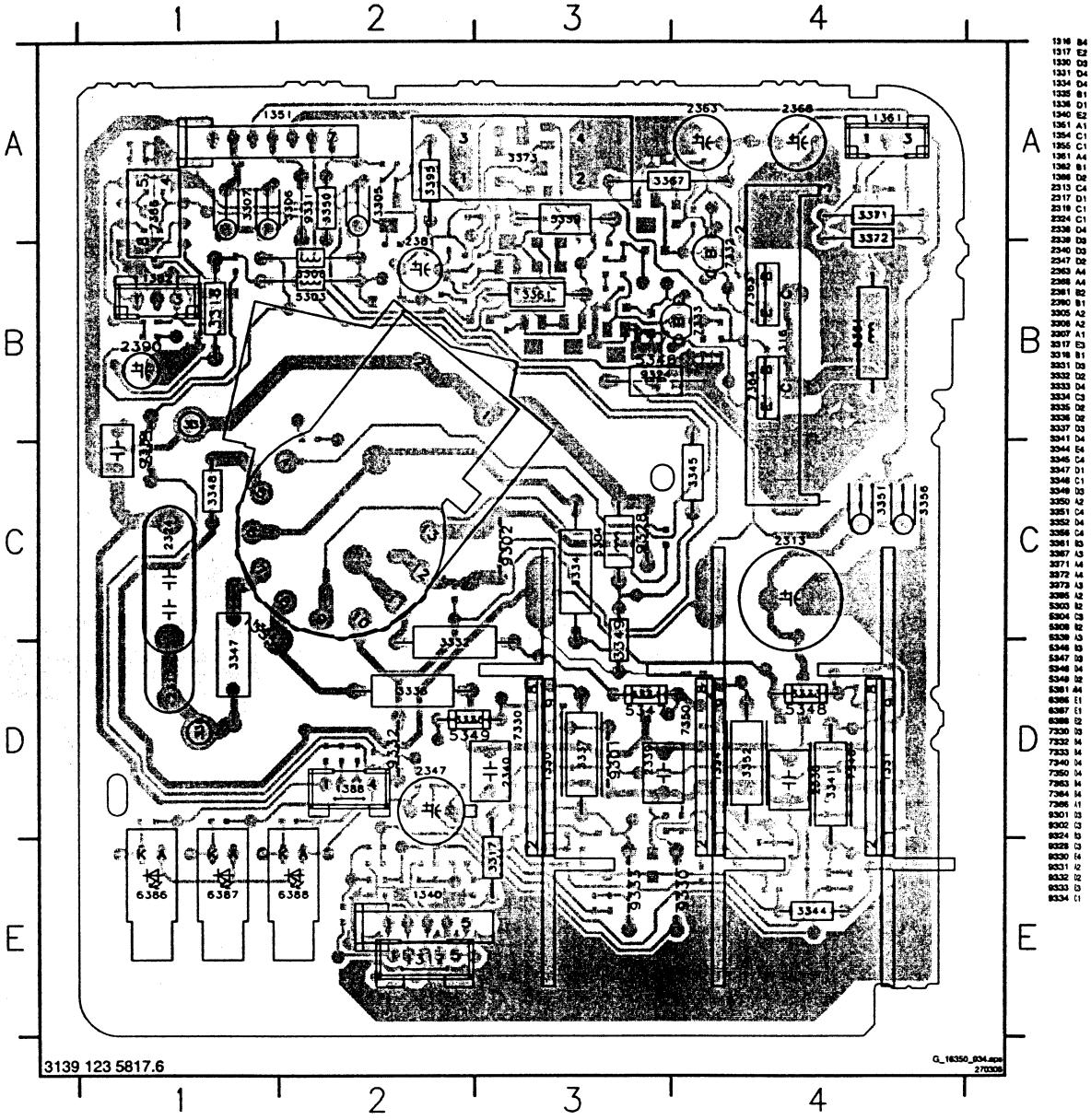
For Europe

ITEM	SIZE/TUBE 29RF A68ERF182X044	28WSRF A66ERF172X044	32WSRF A66ERF172X044	28BLD A66EAK075X054
1354	NON-DAF SOCKET	DAF SOCKET	DAF SOCKET	NON-DAF SOCKET
2371	5.6pF	5.6pF	5.6pF	5.6pF
2372	5.6pF	5.6pF	5.6pF	5.6pF
2373	5.6pF	5.6pF	5.6pF	5.6pF
2374	330nF	330nF	330nF	330nF
3306	5R6	5R6	5R6	5R6
3307	5R6	5R6	5R6	5R6
3358	4K7	4K7	4K7	4K7
3359	6K8	6K8	6K8	6K8
3360	220R	220R	220R	220R
4301	NOT USED	NOT USED	NOT USED	NOT USED
4302	NOT USED	NOT USED	NOT USED	NOT USED
4303	USED	USED	USED	USED
4304	USED	USED	USED	USED
4305	USED	USED	USED	USED
4306	USED	USED	USED	USED
4307	USED	USED	USED	USED
4308	USED	USED	USED	USED
4310	USED	USED	USED	USED
4311	NOT USED	NOT USED	NOT USED	NOT USED
4312	NOT USED	NOT USED	NOT USED	NOT USED
4313	NOT USED	NOT USED	NOT USED	NOT USED
6335	BAV99	BAV99	BAV99	BAV99
6336	BAV99	BAV99	BAV99	BAV99
6380	NOT USED	NOT USED	NOT USED	NOT USED
6381	NOT USED	NOT USED	NOT USED	NOT USED
9302	USED	USED	USED	USED
9324	NOT USED	NOT USED	NOT USED	NOT USED
Rotation crt	NOT USED	USED	USED	NOT USED

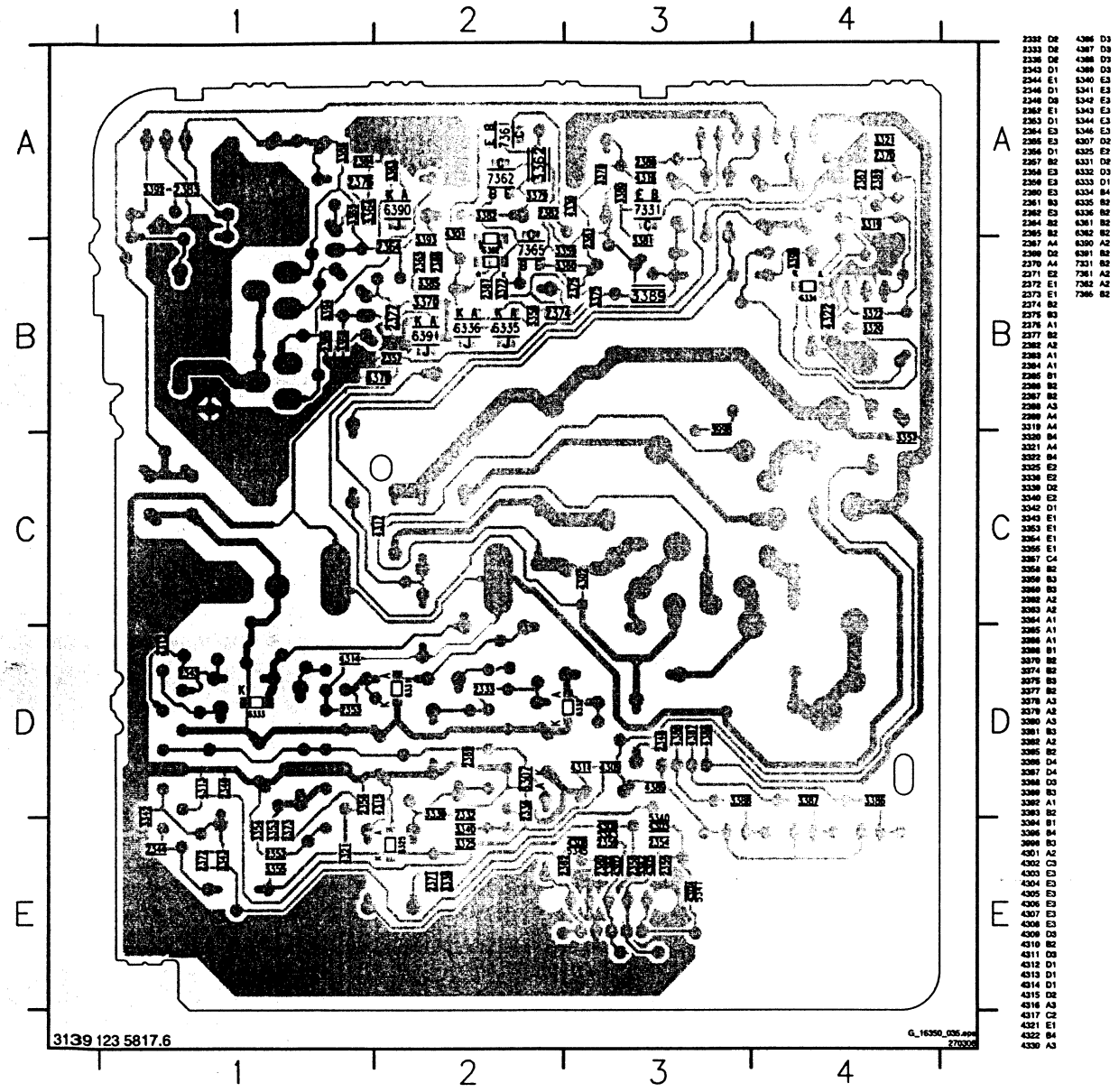
1316 A15 1317 E1 1330 A8 1331 D8 1334 G8 1335 F11 1336 J16 1340 E1 1351 J6 1354-A I12 1354-B J13 1354-C H12 1354-D J14 1354-E H12 1354-F I12 1354-G I12 1354-H G12 1354-I I12 1354-J J12 1354-K I12 1355 F12 1361 A16 1362 D16 1388 B1 2313 K9 2317 J15 2319 J10 2324 J15 2332 C5 2333 B9 2336 D7 2338 A6 2339 D6 2340 D6 2343 E8 2344 F5 2346 F7 2347 D3 2348 D2 2352 I5 2353 H8 2354 B4 2355 C4 2356 I7 2357 C12 2358 F3 2359 F4 2360 D2 2361 A12 2362 H2 2363 A13 2364 A13 2365 C13 2367 D13 2368 B13 2369 C8 2370 D13 2371 B4 2372 E4 2373 G3 2374 A11 2375 C11 2376 A14 2377 C15 2381 A10 2382 C11 2383 B15 2384 A13 2385 B13 2386 C13 2387 C12 2388 D10 2389 E14 2390 C15 3305 D2 3306 I9 3307 I9 3317 C8 3318 B15 3319 C16 3320 D12 3321 D12 3322 F14 3325 A4 3331 G9 3332 G10 3333 H9 3334 H10 3335 H9 3336 H10 3337 A6 3338 B4 3339 B5 3340 C4 3341 D6 3342 F4 3343 E4 3344 E5 3345 J9 3347 J15 3348 J13 3349 J9 3350 D12 3351 K8 3352 G4 3353 H3 3354 H4 3355 H4 3356 K8 3357 J10 3358 A10 3359 B10 3360 C11 3361 A11 3362 A12 3363 A13 3364 A14 3365 A13 3366 B13 3367 B13 3368 C13 3370 C15 3371 B15 3372 B15 3373 A11 3374 C12 3375 C11 3377 C11 3378 C10 3379 B11 3380 B9 3381 D9 3382 B12 3385 C13 3386 B2 3387 B2 3388 B2 3389 C2 3392 A15 3393 B12 3394 C13 3395 B10 3396 D12 3999 G1 4301 B12 4302 J11 4303 B4 4304 C4 4305 F3 4306 F3 4307 F2 4308 G2 4309 C3 4310 C12 4311 D7 4312 E8 4313 F7 4314 H8 4315 I7 4316 C10 4317 F11 4386 B1 4387 B1 4388 B1 4389 D3 5303 E3 5304 I10 5308 D2 5339 B12 5340 B4 5341 C4 5342 F3 5343 F3 5344 F2 5345 G2 5346 I6 5347 G8 5348 H9 5349 H9 5361 B15 5362 A4 6331 F10 6332 G10 6333 G10 6334 D12 6335 A11 6336 A11 6361 B11 6362 B11 6386 B2 6387 B2 6388 B2 6390 A14 6391 C13 7330 A5 7331 C10 7332 A14 7333 C14 7340 D5 7350 G5 7361 A12 7362 B12 7363 B14 7364 B14 7365 B11 7366 C14 9301 B9 9302 I11 9324 J6

G_16350_033.eps 270306

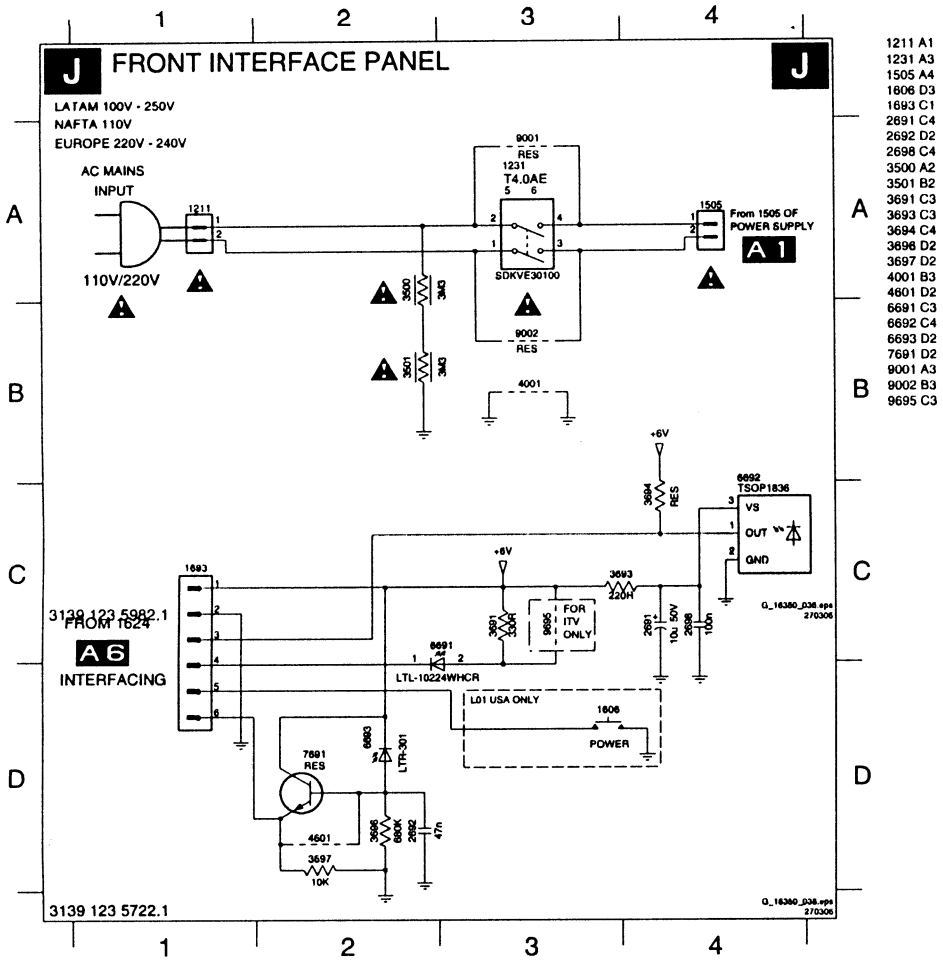
Layout CRT Panel (Top Side)



Layout CRT (Bottom Side)



Front Interface Panel (SL6)



1211 A1
1231 A3
1505 A4
1606 D3
1693 C1
2691 C4
2692 D2
2698 C4
3500 A2
3501 B2
3691 C3
3693 C3
3694 C4
3696 D2
3697 D2
4001 B3
4601 D2
6691 C3
6692 C4
6693 D2
7691 D2
9001 A3
9002 B3
9695 C3

Personal Notes:

E_06532_012.eps
131004

8. Alignments

Index of this chapter:

8.1 General Alignment Conditions
8.2 Hardware Alignments
8.3 Software Alignments
8.4 Option Settings

8.1 General Alignment Conditions

8.1.1 Default Alignment Settings

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 230 V_{AC} / 50 Hz (± 10 %).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 20 to 30 minutes.
- Measure voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply).
  Caution: never use heatsinks as ground.
- Test probe: 100 : 1, Ri > 10 Mohm, Ci < 3.5 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

Perform all electrical adjustments with the following default settings (for all CRTs):

- Choose "Soft" picture mode with the "Smart Picture" button on the remote control.
- Set "Dynamic Contrast" and "Active Control" to "off" (if either one of them is present).
- Set "Brightness" to aligned value unless otherwise specified.
- Set "Contrast value" to 99.

8.1.2 Adjustment Sequence

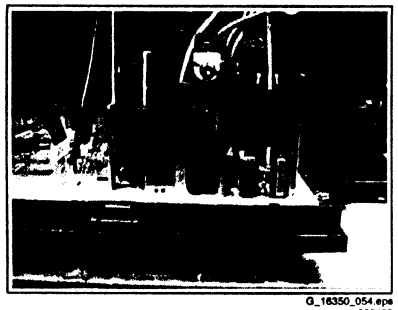
Use the following adjustment sequence:

1. Set the correct TV-set OPTIONS as described in paragraph "Options". After storing, re-start the set.
2. Rough adjustment of VG2 and FOCUS (potentiometers in "midway" positions; N.B.: wrong positions may cause error messages because of H or V-protection mechanism).
3. RF-AGC alignment.
4. Rough adjustment of GEOMETRY.
5. Allow the set to warm up.
6. Precise adjustment of VG2 and FOCUS.
7. Precise adjustment of GEOMETRY.
8. PIP alignments (if present).
9. COLOUR alignments.
10. Other software alignments.

8.2 Hardware Alignments

Notes:

- The Service Alignment Mode (SAM) is described in chapter 5 "Service Modes, Error Codes, and Fault Finding".
- Use the cursor-, menu-, and OK-buttons of the remote control (RC) transmitter for navigation.



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060406

Figure 8-1 Focus 1, 2, and Screen Vg2 adjustment

8.2.1 Vg2 Adjustment

In the frame-blanking period of the R, G, and B signals applied to the CRT, the video processor inserts a measuring pulse with different DC levels. Measure the black level pulse during the vertical flyback at the RGB cathodes of the CRT (pin 8 = R, 6 = G, 11 = B).

1. Connect the RF output of a pattern generator to the antenna input. Input a "black" picture (blank screen on CRT without any OSD info) test pattern.
2. In the SAM mode, set the "Normal Red", "Normal Green" and "Normal Blue" values to "0" for "White Tone".
3. Disable the black current loop (via the AKB bit).
4. Use the MENU key to enter the "user" menu, select "Picture", and set "Brightness" and "Contrast" to "0".
5. Set the oscilloscope to 20 V/div and the time base to 20 us/div. Use external triggering on the vertical pulse.
   Caution: use a trigger point on the **"cold"** side!
6. Ground the scope on the CRT panel (**"cold"** side) and connect a 10:1 probe to one of the cathodes of the picture tube socket (see circuit diagram F).
7. Measure at cathodes on the picture tube socket the DC-level of the measuring pulse (1st full line after the frame blanking) with respect to earth; N.B.: R = pin 8, G = pin 6, B = pin 11 of CRT socket.
8. Select the pin with the highest level found and adjust V_cutoff by means of the Vg2-potmeter (lowest-one) on the Line Output Transformer (LOT) to 145 +/- 5 V_{DC} (for all screen sizes).
9. Reset "Contrast" and "Brightness" to their original values.

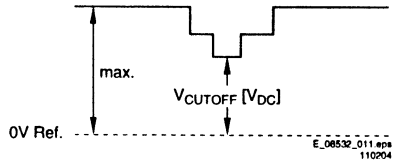

Figure 8-2 Waveform Vg2 alignment

8.2.2 Focus alignment

The LOT has the following outline:

- **Focus 1 (F1) = Static alignment (red wire).**
- *Focus 2 (F2) = Dynamic alignment (white wire).*

1. Use an external video pattern generator to input a "circle" or "crosshatch" test pattern to the set.
2. Choose "Natural" picture mode with the "Smart Picture" button on the remote control transmitter.
3. Adjust the "dynamic focus 2" potentiometer (in the middle on the LOT) until the horizontal lines at the centre of the screen are of minimum width without introducing a visible haze.
4. Adjust the "static focus 1" potentiometer (highest of the LOT) until the horizontal lines at the sides of the screen are of minimum width without introducing a visible haze.
5. Repeat these two steps to achieve the best result.

8.3 Software Alignments

Put the set in the SAM (see the "Service Modes, Error Codes and Fault Finding" section). The SAM menu will now appear on the screen. The different alignment parameters are described further on.

Notes:

- All changes to menu items and alignments must be stored manually.
- If an empty EAROM (permanent memory) is detected, all settings are set to pre-programmed default values, so the set must be re-aligned.

8.3.1 Tuner

AGC

1. Set an external pattern generator to a colour bar video signal and connect the RF output to the aerial input of the TV. Set the amplitude to 10 mV and the frequency to 475.25 MHz. Use system PAL B/G if possible, otherwise match the system of your generator with the received signal in the set.
2. Put the set in the SAM mode.
3. Select via the TUNER menu, the AGC sub-menu.
4. Connect a DC multi-meter to pin 1 of the tuner (F235, AGC pin).
5. Adjust the AGC until the voltage at pin 1 (F235, AGC pin) of the tuner is 3.3 V (+/- 0.1 V). The value can be incremented or decremented by pressing the right/left CURSOR button on the RC.
6. After alignment, save the value(s) with the STORE command in the SAM main menu.

IF PLL OFFSET

No adjustments needed: default value (which can not be changed) is "0".

8.3.2 Geometry

Notes:

- Set an **external** pattern generator to a crosshatch video signal and connect the RF output to the aerial input of the TV. Set the amplitude at least 1 mV_{RMS} (60 dBµV) and the frequency to 475.25 MHz. Use system PAL B/G if possible, otherwise match the system of your generator with the received signal in the set.
- Use the default alignment settings, but set "Brightness" to "32".
- For wide screen models, set to "wide screen" mode, for "classic" models, set to "4:3".
- After alignment, save the value(s) with the STORE command in the SAM main menu.

Service tip: When the set is equipped with a rotation coil, use this menu item to check its correct alignment. If alignment is not correct, go to the user MENU, choose FEATURES, and select ROTATION. With the use of a crosshatch test pattern, align it to a correct horizontal picture.

Alignment

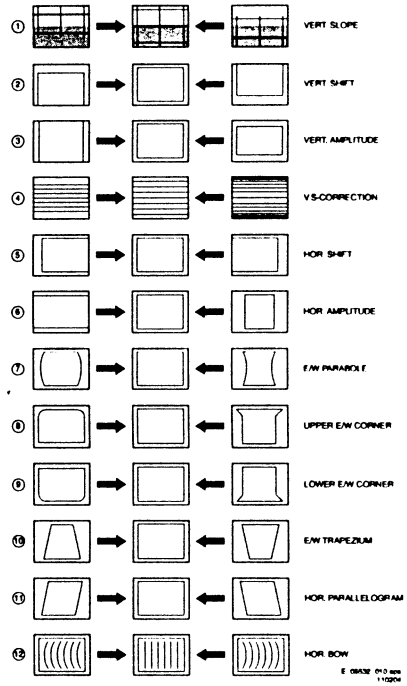

Figure 8-3 Geometry Alignments

Select "Pixel Plus" mode and put a test picture on the screen. Use the following software regulations to modify the vertical parts of the screen geometry (see Figure "Geometry Alignments" for a general idea of what you should see on the screen):

1. VSH (Vertical Shift): Align for the vertical picture centre, range from 0 to +63.
2. VAM (Vertical Amplitude): Compensating for any gain error in amplifier, adjust range from 0 to +63 to the proper amplitude.
3. VSC (Vertical S-Correction): Align for equal height of the blocks in the top, the bottom and the middle, range from 0 to +63.
4. VS (Vertical Slope). First activate menu item SBL (Service Blanking = ON), so the lower part of the test picture is no longer visible. Then adjust the Vertical Slope. Align for the horizontal line in the middle of the test picture to line up with the boundery between the (still visible) upper part of the screen and the (invisible) lower part of the screen. Range from 0 to +63. After this, switch the SBL to OFF again.

Next, align the following *horizontal screen geometry settings*:

1. HSH (Horizontal Shift): Adjust for the horizontal centre of the screen, range from 0 to +63.

2. EWW (East-West Width): This sets the (overall) horizontal size of the picture on the screen. Range from 0 to +63.
3. EWP (East-West Parabola): Align for the vertical lines of the test picture to be straight lines. Range from 0 to +63.
4. HB (Horizontal Bow): Align the EW parabola to be symmetrical, range from 0 to +63.
5. HP (Horizontal Parallel): Align for straight vertical lines on the picture sides, range from 0 to +63.
6. UCP (Upper Corner Parabola): Align for the vertical lines in the upper corners of the screen to be straight. Range from 0 to +63.
7. LCP (Lower Corner Parabola): Align for the vertical lines in the lower corners of the screen to be straight. Range from 0 to +63.
8. EWT (East-West Trapezium): Align for equal length of the horizontal lines in the upper and lower parts of the screen. Range from 0 to +63.

Now, select "Double Lines" mode, and again align the following vertical screen geometry setting:

1. VS (Vertical Slope); First activate menu item SBL (Service Blanking = ON), so the lower part of the test picture is no longer visible. Then adjust the Vertical Slope. Align for the horizontal line in the middle of the test picture to line up with the boundery between the (still visible) upper part of the screen and the (invisible) lower part of the screen. Range from 0 to +63. After this, switch the SBL to OFF again.

8.3.3 White Tone

In the WHITE TONE sub menu, the colour values for the different colour temperatures can be changed.
The colour temperature mode (NORMAL, DELTA COOL, DELTA WARM) can be selected per colour (R, G, and B) with the RIGHT/LEFT cursor keys. The mode or value can be changed with the UP/DOWN cursor keys.
First, the values for the NORMAL colour temperature must be selected. Then the offset values for the DELTA COOL and DELTA WARM mode can be selected. Note that the alignment values are non-linear.

Alignment
Normally, no adjustments are needed.
If the white tone alignment values used in CSM of the the TV set do not give the required result, use the following alignment method:

1. Set the external pattern generator to a 100% white pattern, and connect its RF output to the aerial input of the TV. Set the amplitude to at least 1 mV_{RMS} (60 dBuV) and the frequency to 475.25 MHz. Use system PAL B/G if possible, otherwise match the system of your generator with the received signal in the set.
2. Set "Smart Picture" to "Natural".
3. Set "Dynamic NR" to "off".
4. Put the set in the SAM mode.
5. Select via the WHITE TONE menu, the PATTERN sub-menu.
6. Set PATTERN to "on".
7. Set NORMAL GREEN to "0".
8. Measure with the colour analyser (Minolta CA100 Colour Analyser or equivalent), calibrated with the spectra, on the centre of the screen.
9. Adjust with the cursor left/right command the Red and Blue register for the right xy-coordinates (see the table below).
10. Repeat the white tone adjustment also for the colour temperatures COOL and WARM.

Table 8-1 White tone alignment (with colour analyser)

White D mode	Temperature	DUV	x	y
Normal	13100 K	+-0.004	264 +/- 4	279 +/- 4
Cool	18300 K	+-0.005	256 +/- 5	264 +/- 5
Warm	6500 K	+-0.005	314 +/- 5	324 +/- 5

8.3.4 Sound

No adjustments needed. Use the given default values:

- AF-M = 250
- A2T = 400
- AT = 2

8.3.5 Smart Settings

No adjustments needed.

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I²C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known by the option codes.

Notes:

- After changing the option(s), save them with the STORE command.
- All changes are disregarded when the OPTIONS submenu is left without using the STORE command.
- The new options setting is only active after the TV is switched "off" and "on" again with the Mains switch (the EAROM is then read again).

8.4.2 Changing Options

Options are used to control the presence / absence of certain features and hardware. There are two ways to change the option settings. All changes in the option settings are saved by selecting STORE and pressing the CURSOR RIGHT key. Some changes will only take affect after the set has been switched OFF and ON with the mains switch (cold start).

Changing Multiple Options by Changing Option Byte Values
Option Bytes (OB) makes it possible to set all options very fast. An option byte represents a number of different options. All options are controlled via option bytes (OB1 to OB13; each "OB" number represents 16 bits; bit numbers that are not used are omitted in the second column). Select an Option Byte you want to change with the CURSOR UP/DOWN keys, and key in the new value. See the table for more details. An explanation per option is listed in paragraph "Option Bit Definition".

Changing a Single Option
It is also possible to change an option one at a time. Therefore, select the option with the CURSOR UP/DOWN keys and change its setting with the LEFT/RIGHT keys.

8.4.3 Option Settings

Table 8-2 Option codes in detail, at bit level

In the table below, you will find the option settings.

Option byte & bit table for restoring the TV set to its original Factory Default Options via the NVM Editor in the SAM menu			
	Model number	29PT8521/12	32PW9966/12
OP1	Description of feature/option to be switched ON or OFF		
bit 7 (msb)	OP_PHILIPS_TUNER	1	1
bit 6		0	0
bit 5		0	0
bit 4		0	0
bit 3	OP_ACI	1	1
bit 2	OP_UK_PNP	0	0
bit 1	OP_VIRGIN_MODE	1	1
bit 0 (lsb)		0	0
	Total DEC Value	138	138
	Total HEX Value	8A	8A
OP2			
bit 7 (msb)		0	0
bit 6		0	0
bit 5		0	0
bit 4		0	0
bit 3	OP_TILT	0	1
bit 2		0	0
bit 1		0	0
bit 0 (lsb)		0	0
	Total DEC Value	0	8
	Total HEX Value	00	08
OP3			
bit 7 (msb)		0	0
bit 6		0	0
bit 5		0	0
bit 4		0	0
bit 3		0	0
bit 2	OP_WIDE_SCREEN	0	1
bit 1	OP_WSSB	0	1
bit 0 (lsb)		0	0
	Total DEC Value	0	6
	Total HEX Value	00	06
OP4			
bit 7 (msb)	OP_COMPRESS_16_9	1	0
bit 6		0	0
bit 5		0	0
bit 4		0	0
bit 3		0	0
bit 2		0	0
bit 1		0	0
bit 0 (lsb)		0	0
	Total DEC Value	128	0
	Total HEX Value	80	00
OP5			
bit 7 (msb)		0	0
bit 6		0	0
bit 5		0	0
bit 4		0	0
bit 3		0	0
bit 2		0	0
bit 1		0	0
bit 0 (lsb)		0	0
	Total DEC Value	0	0
	Total HEX Value	00	00
OP6			
bit 7 (msb)		0	0
bit 6		0	0
bit 5		0	0
bit 4		0	0
bit 3		0	0
bit 2		0	0
bit 1	OP_LIGHT_SENSOR	1	1
bit 0 (lsb)		0	0
	Total DEC Value	2	2
	Total HEX Value	02	02
OP7			
bit 7 (msb)		0	0
bit 6		0	0
bit 5		0	0
bit 4	OP_SS_DEMO_EU	1	1
bit 3		0	0
bit 2		0	0
bit 1		0	0
bit 0 (lsb)		0	0
	Total DEC Value	18	18
	Total HEX Value	10	10

8.4.4 Option Bit Definition

OP_PHILIPS_TUNER: Philips Tuner.
Function: Choose the tuner type that is configured in the hardware.
Values: OFF= Disabled, Other (non-Philips) tuner is used. ON= Enabled, Philips compatible tuner is used.

OP_ACI: Automatic Channel Installation.
Function: Disable/Enable automatic channel installation.
Values: OFF= Disabled Automatic Channel Installation. ON= Enabled Automatic Channel Installation.
Note: Download present program when ACI is ON.

OP_UK_PNP: UK Plug and Play.
Function: Disable/Enable UK's default Plug and Play setting.
Values: OFF= Disabled, UK's default Plug and Play setting is not available. ON= Enabled, UK's default Plug and Play setting is available.
Note: When UKPNP and VMOD are ON at the initial set-up, LANGUAGE= ENGLISH, COUNTRY= GREAT BRITAIN and after auto store is complete, VMOD will be set automatically to OFF while UKPNP remain ON.

OP_VIRGIN_MODE: Virgin Mode.
Values: OFF= Disabled, cannot access virgin mode. ON= Enabled, can access virgin mode.
Function: Disable/Enable virgin mode.
Note: Plug and Play menu item will be displayed to perform installation at the initial start up of the TV when VIRGIN MODE is ON and after installation is done, VIRGIN MODE will be automatically set to OFF.

OP_TILT: Rotation Tilt.
Function: Change the tilt level of picture tube.
Values: OFF= Disabled, menu item ROTATION is not available. ON= Enabled, menu item ROTATION is available (WS = 1; 4 : 3 = 0).

OP_WIDE_SCREEN: Screen size 16x9.
Function: Disable/Enable Screen size 16x9.
Values: OFF= Disabled. Screen size 16x9 is not available. ON= Enabled. Screen size 16x9 is available.

OP_WSSB: Wide Screen Signalling Bit.
Function: Disable/Enable Wide screen Signalling bit function.
Values: OFF= Disabled. ON= Enabled (WS = 1; 4 : 3 = 0).

OP_COMPRESS_16_9: Compression enable/disable bit.
Function: Disable/Enable screen compression function.
Values: OFF= Disabled. ON= Enabled (compression = 1; no compression = 0).

OP_LIGHT_SENSOR: Light sensor on/off switching bit.
Function: Disable/Enable Light sensor.
Values: OFF= Disabled. Light sensor mode disabled. ON= Enabled. Light sensor mode available.

OP_SS_DEMO_EU: Split Screen Demo.
Function: Disable/Enable Split Screen Demo.
Values: OFF= Disabled. Split Screen Demo is not available. ON= Enabled. Split Screen Demo is available.

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:
9.1 Introduction
9.2 Small Signal Board
9.3 Software Upgrading
9.4 Abbreviation List
9.5 IC Data Sheets

Note: Only new circuits (circuits that have not been published recently) are mentioned. For the other circuits, see the A02 and the ES1 manuals.

9.1 Introduction

The L06.1E is a 100 Hz widescreen CRT based HD prepared TV set for the year 2006. Its CRT has a "RF" (Real Flat) screen, with 29 and 32 inch screen formats.
The set has the following styling: SL6.
Pixel Plus technology is used for improved picture quality.
This TV set is based on the LSP of the ES1 (which in its turn is based on the A02).
It has a new SSB. The SSB is no longer directly attached to the LSP, but has been moved to a separate position in the TV set. Flatcables are used for the connections between the LSP and the SSB.

For a description of the deflection circuits, the correction circuits and the X-ray protection circuits of the LSP, see the ES1 manual. For a description of the remaining LSP circuits, see the A02 manual, on which the ES1 was based.
For a description of the new SSB, see the circuit diagrams in chapter 6 and the general description below.

9.1.1 General description of the SSB

The L06.1E chassis has a new SSB, with respect to the SSB used in the ES1 chassis. This SSB is based on the Trident and a new processor Reneas (instead of the Painter processor used in the L05 chassis).

The main functionalities of the SSB are:
- RF tuner, RF/AV decoder, 3D comb filter, AV interface for: 2 SCART connectors, 1 Side AV (for SVHS and headphone); HD YPbPr/LR; HDMI/DVI plus LR Audio.
- Up-scaler (uses PQ registers in Trident),
- Audio decoder/processor,
- Deflection processor,
- System controller with Teletext processor (128 MB memory, shared between video and Teletext - 1200 pages.

9.2 Small Signal Board

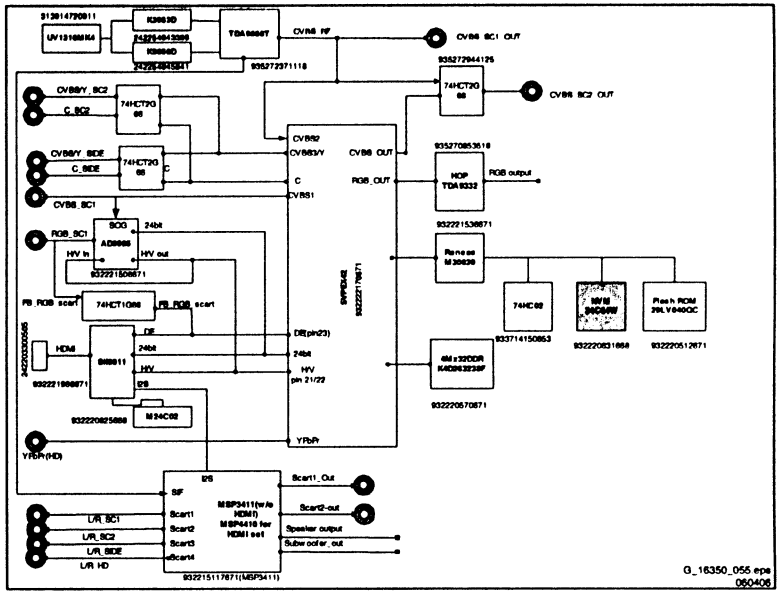

Figure 9-1 SSB architecture

9.3 Software Upgrading

In this chassis, you can upgrade the software via the IAP tool (In Application Programming). This offers the possibility, to replace the entire SW image without having to remove the flash-RAM from its socket. You can find more information on this in Chapter 5 ("Service Modes, Error Codes, and Faultfinding") in the paragraph "IAP Tool".

9.4 Abbreviation List

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format
2CS	2 Carrier Sound
A2	Commonly known as 2 Carrier Sound (2CS) system
AC	Alternating Current
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
ADOC	Analogue Digital One Chip
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
ANC	Automatic Noise Reduction; One of the algorithms of Auto TV
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASD	Automatic Standard Detection
AUDIO-SL	Audio Surround Left
AV	Audio Video
AVL	Automatic Volume Level control
B-SC1-IN	Blue SCART1 in
B-SC2-IN	Blue SCART2 in
B-TXT	Blue teletext
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BBD	Black Bar Detection
BCL	Beam Current Limiter
BC-PROT	PROTection signal to the microprocessor in case of a too high Beam Current.
BLC-INFO	BLack Current INFO.
BLD	BLack Level Detection.
BS	BLack Stretch.
BTSC	Broadcast Television Standard Committee; Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries.
C	Centre channel (audio) or Chroma; The NTSC/PAL/SECAM video signal contains two parts that make up what we see on the display; the luminance (or intensity) part and the colour (or chroma) part
CBA	Circuit Board Assembly (or PWB)
CL	Constant Level: audio output to connect with an external amplifier
CLUT	Colour Look Up Table
ComPair	Computer aided rePair
CRT	Cathode Ray Tube (or picture tube)
CSM	Customer Service Mode
CTI	Colour Transient Improvement; Manipulation of the steepness of the chroma transients
CVBS	Composite Video Blanking and Synchronisation
CVBS-EXT	CVBS signal from external source (VCR, VCD, etc.)
CVBS-INT	CVBS signal from Tuner
CVBS-MON	CVBS monitor signal
CVBS-TER-OUT	CVBS terrestrial out
CVI	Component Video Input

D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz. D= VHF-band, K= UHF-band
DAC	Digital to Analogue Converter
DAF	Dynamic Astigmatism and Focusing; a method to keep the electron spot round and focused during the whole scan
DBE	Dynamic Bass Enhancement; extra low frequency amplification
DC	Direct Current
DCC	Dynamic Contrast Control
DC-filament	Filament supply voltage
DEGAUSS	Control line. Logic LOW to enable CRT degaussing. Logic HIGH to disable the CRT degaussing.
DFU	Directions For Use: owner's manual
DNR	Digital Noise Reduction; Noise reduction feature of the set / Dynamic Noise Reduction
DNR	Digital Noise Reduction; Noise reduction feature of the set / Dynamic Noise Reduction
DOP	Digital Output Processor (Part of ADOC which takes care of RGB control and deflection)
DPL	Dolby Pro Logic
DPL	Dolby Pro Logic
DRAM	Dynamic RAM; dynamically refreshed RAM
DRAM	Dynamic RAM; dynamically refreshed RAM
DS	Digital Scan
DSP	Digital Signal Processing
DST	Dealer Service Tool; Special remote control designed for dealers to enter e.g. service mode (a DST-emulator is available in ComPair)
DTS	Digital Theatre Sound
DVD	Digital Versatile Disc
DVI(-d)(-i)	Digital Visual Interface (d= digital only) (i= integrated); A digital video interface to a display, designed to replace the analogue YPbPr or RGB interface
DW	Double Window
DYN-FASE-COR	Dynamic phase correction, to correct the phase of the H-drive
EEPROM	Electrically Erasable and Programmable Read Only Memory
EHT	Extreme High Tension; the voltage between the cathode and the shadow mask that accelerates the electrons towards the screen (around 25 kV)
EHT-INFO	Extra High Tension INFOrmation, used for contrast reduction, vertical and horizontal amplitude correction, beam current protection, and flash detection
EMI	Electro Magnetic Interference; Leakage of high-frequency radiation from a transmission medium
EPG	Electronic Program Guide; System used by broadcasters to transmit TV guide information (= NexTView)
EPLD	Erasable Programmable Logic Device
EU	EUrope
EW	East West, related to horizontal deflection of the set
EW-DRIVE	East -West correction drive signal.
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-SC1-IN	Fast blanking signal for SCART1 in
FBL-SC2-IN	Fast blanking signal for SCART2 in
FBL-TXT	Fast Blanking Teletext
FBX	Feature BoX; Part of the small signal board /separate module which contains 100 Hz processing, extra features and AutoTV algorithms (FBX6= based on PICNIC, FBX7= based on PICNIC and Eagle, FBX8= based on PICNIC, Eagle, and Columbus)
FE	Front End; Tuner and RF part together
FLASH	FLASH memory
Field	Each interlaced broadcast FRAME is composed of two Fields, each Field consists of either Odd or Even lines
Filament	Filament of CRT
FLASH	FLASH memory
FM	Field Memory / Frequency Modulation
FM-Radio	Radio receiver that can receive the FM Band 87.5 - 108 MHz
FMR	FM Radio
Frame	A complete TV picture comprising all lines (625/525)
FRAMEDRIVE -	Differential frame (vertical) drive signal (negative)
FRAMEDRIVE +	Differential frame (vertical) drive signal (positive)
FRC	Frame Rate Converter
FRONT-C	Front input chrominance (SVHS)
FRONT-DETECT	Control line for detection of headphone insertion, Service Mode jumper, power failure detection
FRONT-Y_CVBS	Front input luminance or CVBS (SVHS)
FTV	Flat TeleVision
G	Green
G-SC1-IN	Green SCART1 in
G-SC2-IN	Green SCART2 in
G-TXT	Green teletext
Gb/s	Giga bits per second
H	H_sync to the module
H-2FH	Horizontal sync input for the 2fH source
H-A50	Horizontal Acquisition 1fH: horizontal sync pulse coming out of the HIP
H-D100	Horizontal Drive 2fH; Horizontal sync pulse coming out of the Feature Box
H-DRIVE	Horizontal Drive
H-FLYBACK	Horizontal Flyback
H-OUT	H_sync output of the module / Horizontal Output pulse
HA	Horizontal Acquisition; horizontal sync pulse
HD	High Definition: 720p, 1080i, 1080p
HDMI	High Definition Multimedia Interface, digital audio and video interface
HEADPHONE-L	Stereo headphone (Left) signal output.
HEADPHONE-R	Stereo headphone (Right) signal output.
HFB	Horizontal Flyback Pulse; Horizontal sync pulse from large signal deflection
HP	Head Phone
HW	Hardware
I	Monochrome TV system. Sound carrier distance is 6.0 MHz. VHF- and UHF-band
IAP	IAP Tool (In Application Programming): used to upload software to a TV set without having to remove flash ROMs
I^2C	Inter IC bus (also called IIC)
I^2S	Inter IC Sound bus
IC	Integrated Circuit
IDRIVE-	Vertical drive -
IDRIVE+	Vertical drive +
IF	Intermediate Frequency

IF-TER	IF signal from main tuner
IIC	Inter IC bus (also called I2C)
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.
IO	In/Out
IR	Infra Red
IROM	Internal ROM (inside the microcontroller)
IRQ	Interrupt ReQuest
ITV	Institutional TV
JTAG	Joint Test Action Group; Definition for a standardised serial test interface
KEYB	Front panel keyboard
KEYBOARD	Input line. Carries the voltage value of the corresponding tact switch on TOP-control or FRONT-control keypad
L	Left audio channel
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences
LATAM	LATin AMerica
LCD	Liquid Crystal Display
L-CL_VLOUT	REAR CINCH stereo output
LED	Light Emitting Diode
LFE	Low Frequency Enhancement audio channel
L-FRONT-IN	EXT3 stereo input
LIGHT-SENSOR	Ambient light intensity signal.
LINE DRIVE	Horizontal (line) deflection drive signal (for the Line transistor)
LNA	Low Noise Adapter / Low Noise Amplifier
LOT	Line Output Transformer (also called FBT); The transformer in which the EHT is generated
LS	Loud Speaker
Ls, Rs	Left surround and Right surround channel (audio)
LSP	Large Signal Panel
Lt, Rt	Left total and Right total in case of a Dolby ProLogic encoded signal (audio)
LTI	Luminance Transient Improvement
LTP	Luminance Transient Processor
LUT	Look Up Table
LVDS	Low Voltage Differential Signalling, data transmission system for high speed and low EMI communication.
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz. M= 525 lines @ 60 Hz, N= 625 lines @ 50 Hz
Mb/s / Mbps	Mega bits per second
MCS	Multi Channel Sound: refers to Dolby Pro Logic Surround in ES1E ADOC
MDO	Mode control data output
MIPS	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
Mips	Million instructions per second
MMI	Multi Media Interface
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MPEG	Motion Pictures Experts Group
MPIF	Multi Platform InterFace (Part of Salsa chipset, sister-chip of ADOC IC)
MPIP	Multi Picture in Picture; Commercial feature showing several frozen or moving pips
MPX	MultiPleX
MSP	Multi-standard Sound Processor: ITT sound decoder
MUTE	MUTE Line
NAFTA	North American Free Trade Association: Trade agreement between Canada, USA and Mexico
NC	Not Connected
NDF	No vertical Deflection; Vertical fly back protection
NHF	No Horizontal deflection; Horizontal fly back protection
NICAM	Near Instantaneously Companded Audio Multiplexing; This is a digital sound system, mainly used in Europe
NTC	Negative Temperature Coefficient, non-linear resistor (resistance decreases if temperature increases)
NTSC	National Television Standard Committee. Colour system used mainly in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non Volatile Memory; IC containing data such as alignment values, preset stations
O/C	Open Circuit
OB	Option Byte
OC	Open Circuit
ON/OFF LED	On/Off control signal for the LED
ON/STBY	On/Standby
ON-OFF-LED	Active-LOW control line. Logic LOW = red LED "on", HIGH = red LED "off"
OP	Option Byte
OSD	On Screen Display
P50	Project 50; Communication protocol between TV and peripherals
PAL	Phase Alternating Line; Colour system mainly used in West Europe (colour carrier= 4.433619 MHz) and South America (colour carrier PAL M= 3.575612 MHz and PAL N= 3.582056 MHz)
PC	Personal Computer
PCB	Printed Circuit Board (or PWB)
PCM	Pulse Code Modulation
PILOT	Pilot Signal
PIG	Picture In Graphic
PIP	Picture in Picture
PLL	Phase Locked Loop; Used for e.g. FST tuning systems. The customer can directly provide the desired frequency
POR	Power On Reset; Signal to reset the µP
POR-FLASH	Signal that informs the micro controller (painter) that set will switch "off"
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PTC	Positive Temperature Coefficient, non linear resistor (resistance increases if temperature increases)
PTP	Picture Tube Panel
PWB	Printed Wiring Board (also called PCB or CBA)
PWM	Pulse Width Modulation
QSS	Quasi Split Sound
R	Right audio channel / Red

RAM	Random Access Memory
RC	Remote Control transmitter
RC5 (6)	Remote Control system 5 (6), the signal from the remote control receiver
RDS	Radio Data System (European); This is an MPX signal carried in FM radio channels (87.5 ... 108 MHz)
RESET	RESET signal
RF	Real Flat (picture tube) or Radio Frequency
RGB	Red, Green, and Blue colour space; The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced
RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
RISC	Reduced Instruction Set Computer; A processor architecture based on ultra-high speed processing technology that uses a far simpler set of operating commands than a normal microprocessor does
RMS	Root Mean Square value
ROM	Read Only Memory
S	Surround channel or mono surround channel (audio)
SALSA	System Application for Low Segment of Analogue TV
SAM	Service Alignment Mode
SAP	Secondary Audio Program; Generally used to transmit audio in a second language
SAW	Surface Acoustic Wave
SC	SandCastle: two-level pulse derived from sync signals
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs; This is a 21-pin connector used in EU, that carries various audio, video, and control signals (it is also called Péritel connector)
SCAVEM	Scan Velocity Modulation; Advanced beam control technology, which results in sharper edges on all images for outstanding clarity
SC1-OUT	SCART output of the MSP audio IC
SC2-B-IN	SCART2 Blue in
SC2-C-IN	SCART2 chrominance in
SC2-OUT	SCART output of the MSP audio IC
S/C	Short Circuit
SCL	Serial Clock signal on I^2C bus
SCL-F	Serial CLock signal on Fast I^2C bus
SD	Standard Definition
SDA	Serial Data line of I^2C bus
SDA-F	Data Signal on Fast I^2C bus
SDM	Service Default Mode
SDAM	Service Default / Alignment Mode
SDRAM	Synchronous DRAM
SECAM	SÉquence Couleur Avec Mémoire; Colour system mainly used in France and East Europe. The chroma is FM modulated and the R-Y and B-Y signals are transmitted line sequentially. Colour carriers= 4.406250 MHz and 4.250000 MHz
SEL-SVHS-RR-	
STATUS2	SVHS Selection Signal
SIF	Sound Intermediate Frequency
SIMM	Single In-line Memory Module; 80-fold connector between LSP and SSB
SL	Single In-line Memory Module; 80-fold connector between LSP and SSB
SLDP	Smart Local Dooming Prevention (HW and SW)
SMC	Surface Mounted Component
SMPS	Switched Mode Power Supply
SND	SouND
SNDL-SC1-IN	Sound left SCART1 in
SNDL-SC1-OUT	Sound left SCART1 out
SNDL-SC2-IN	Sound left SCART2 in
SNDL-SC2-OUT	Sound left SCART2 out
SNDR-SC1-IN	Sound right SCART1 in
SNDR-SC1-OUT	Sound right SCART1 out
SNDR-SC2-IN	Sound right SCART2 out
SNDR-SC2-OUT	Sound right SCART2 out
SNDS-VL-OUT	Surround sound left variable level out
SNDS-VR-OUT	Surround sound right variable level out
SNERT	Synchronous No parity Eight bit Reception and Transmission
SOG	Sync On Green
SOPS	Self Oscillating Power Supply
SOUND-ENABLE	Control line to do hardware mute or un-mute of loudspeakers.
SRAM	Static RAM
SRAM	Static RAM
SS	Small Screen
ST-BY	STandBY
STANDBY (POR)	Signal coming from Main Supply informing the supply is switching "off"
STATUS	Status signal from pin 8 of SCART connector
STBY	STandBY
SVHS	Super Video Home System
SW	Software or Subwoofer or Switch
TBD	To Be Defined
THD	Total Harmonic Distortion
TILT	PWM Output signal (variable DC level) to control the picture tilt from the DOP block of the ADOC.
TXT	Teletext; TXT is a digital addition to analogue TV signals that contain textual and graphical information (25 rows x 40 columns). The information is transmitted within the first 25 lines during the Vertical Blank Interval (VBI)
TXT-SW	Teletext switch
U-100	U signal 1fH (after Feature Box)
UART	Universal Asynchronous Receiver Transmitter
UBE	Ultra Bass Enhancement
µC	Microcontroller
UI	User Interface
UOC	Ultimate One Chip
µP	Microprocessor
UV	Colour difference signals
V	V_sync
V-100	V_sync from Feature Box (2fH)
V-2FH	Vertical sync input for the 2fH source.
VA50	Vertical Acquisition 1fH
V-AMP	Vertical Amplitude DAC output
V-BAT	Main supply for deflection (usually 141 V)
VD-100	Vertical Drive 2fH; vertical sync pulse from deflection
VD-NEG	One of the symmetrical drive signals for the DC frame output stage.
VD-POS	One of the symmetrical drive signals for the DC frame output stage
V-OSD	Vertical sync OSD
VA	Vertical Acquisition
VBI	Vertical Blanking Interval; Time during which the video signal is blanked when going from bottom to top of the display
V-chip	Violence chip. Adds content filtering capabilities to NTSC video
VCR	Video Cassette Recorder
VD	Vertical Drive; Vertical sync pulse coming from the Feature Box
VDS	Virtual Dolby Surround
VERT	Vertical Output pulse

VESA	Video Electronics Standards Association
VGA	Video Graphics Array
VGND	Video ground
VGUARD	Vertical guard voltage
VIF	Video Intermediate Frequency
VL	Variable Level out; Processed audio output towards external amplifier
VOL (+/-)	Volume (+/-)
V-SYNC-VGA	V_sync on VGA connector
WD	Watch Dog
WE	Write Enable control line
WS	Wide Screen; Screens with an aspect ratio of 16:9
WSS	Wide Screen Signalling; Used by broadcasters to transmit e.g. PALPLUS and 16:9 Aspect Ratio
WST	World System Teletext
WXGA	1280x768 (15:9) or 1366x768 (16:9)
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XGA	Extended Graphics Array; 1024x768 (4:3)
XTAL	Quartz crystal
Y	Luminance signal
YPbPr	Component video (Y= Luminance, Pb/Pr= Colour difference signals B-Y and R-Y, other amplitudes w.r.t. to YUV)
Y/C	Y consists of luminance signal, blanking level and sync; C consists of chroma (colour) signal
Y-OUT	Luminance-signal
YUV	Colour space used by the NTSC and PAL video systems. Y is the luminance and U/V are the colour difference signals

9.5 IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs). This is not applicable to this manual.

10. Spare Parts List

Sets Listed

	8670 000 23687	29PT9521/12
	8670 000 23759	32PW9551/12

Set Level

Various

1099▲	9301 982 90314	W76ERF185X044 32"
1099▲	9301 991 30314	A68ERF185X044 29"
1116	3139 267 20471	Side I/O + Control [D]
1160	3139 267 21621	Front Interf. assy [J]
8278	3139 131 07591	Cable 4p280 1100/2x2

—

5203▲	2422 549 00132	Coil degaus 29"WR
5203▲	3139 128 23971	Coil degaus HR32WR
5205	3104 308 20961	Coil canceller
5213	2422 264 00491	Loudsp. 8Ω 10W FR
5214	2422 264 00491	Loudsp. 8Ω 10W FR

Large Signal Panel [A]

Various

1244	2422 025 16382	Connector 3p m
1317	4822 267 10637	Connector 5p
1335	3104 301 08281	Connector 1p
1351	4822 265 41113	Connector 7p
1354	2422 500 00004	Socket CRT 10p 32"
1354	2422 500 80087	Socket CRT 9p 29"
1361	2422 025 16382	Connector 3p m
1382	4822 267 10735	Connector 3p
1401	4822 265 41113	Connector 7p
1404	4822 265 20723	Connector 2p
1452	4822 267 10735	Connector 3p
1500	2422 086 10905	Fuse 4A
1501	2422 090 01101	Soc Fuse 1P Female
1502	2422 090 01101	Soc Fuse 1P Female
1503	2422 132 07467	Relay 1p 12V 5A LKS1AF
1504	4822 265 20723	Connector 2p
1505	2422 025 16374	Connector 2p m
1631	2422 025 08333	Connector 12p m
1904	2422 025 19265	Connector 5p m Bk
1911	4822 267 10734	Connector 5p
8361	3104 311 00141	Cable 3p/340/3p
8400	3139 131 05301	Cable 5p/400/5p
8401	3139 131 03591	Cable 7P 560mm
8404	3104 311 01951	Cable 2p3/560/2p4 Bk
8452	3104 311 06261	Cable 2p/560/2p3
8582	3139 131 07111	Cable 12p340/12p
8583	3139 131 05301	Cable 5p/400/5p
8584	3139 131 07071	Cable 7p/340/3p
8587	3139 131 06751	Cable 3p/340/3p

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2233	3198 024 44730	47nF 50V 0603
2248	4822 124 41751	47µF 20% 50V
2313	4822 124 12373	47µF 20% 250V
2319	4822 122 30043	10nF 80% 63V
2324	4822 121 70581	1.5nF 5% 2kV
2332	4822 126 13193	4.7nF 10% 63V
2333	3198 016 36810	680pF 25V 0603
2336	3198 017 33330	33nF 20% 16V 0603
2338	2022 318 00109	100nF 250V
2339	2022 318 00109	100nF 250V
2340	2022 318 00109	100nF 250V
2343	3198 016 36810	680pF 25V 0603
2344	4822 126 13193	4.7nF 10% 63V
2346	3198 017 33330	33nF 20% 16V 0603
2347	4822 124 80791	470µF 20% 16V
2348	3198 024 44730	47nF 50V 0603
2352	4822 126 13193	4.7nF 10% 63V
2353	3198 016 36810	680pF 25V 0603
2356	3198 017 33330	33nF 20% 16V 0603
2361	2238 586 59812	100nF 20% 50V 0603
2363	4822 124 40764	22µF 100V
2364	2020 557 90732	4.7nF 10% 250V
2365	4822 126 13193	4.7nF 10% 63V
2367	2238 586 59812	100nF 20% 50V 0603
2368	4822 124 40764	22µF 100V
2369	4822 126 14241	330pF 0603 50V
2370	2238 586 59812	100nF 20% 50V 0603
2371	4822 126 11663	12pF 5% 50V 0603
2372	4822 126 11663	12pF 5% 50V 0603
2373	4822 126 11663	12pF 5% 50V 0603
2375	3198 017 34730	47nF 16V 0603
2381	4822 124 40433	47µF 20% 25V
2382	4822 126 13193	4.7nF 10% 63V
2383	2238 930 11541	220pF 5% 200V
2384	2238 586 59812	100nF 20% 50V 0603
2385	2238 586 59812	100nF 20% 50V 0603
2386	3198 017 34730	47nF 16V 0603
2387	4822 126 14507	18pF 5% 50V 0603
2388	4822 126 13193	4.7nF 10% 63V
2389	2238 586 59812	100nF 20% 50V 0603
2390	4822 124 11947	10µF 20% 16V
2402	2020 558 00039	220pF 10% 3.15kV
2404	2038 035 13805	47µF 20% 160V
2406	2020 558 00039	220pF 10% 3.15kV
2407	2022 333 00295	68nF 5% 400V
2408	4822 126 14043	1µF +80-20% 16V 0805
2409	4822 126 12105	33nF 5% 50V 0805
2410	4822 126 14585	100nF 10% 0805 50V
2411	2020 558 90611	1.8nF 10% 2kV
2412	4822 121 70617	10nF 5% 1.6kV
2413	4822 121 10575	27NF 5% 1600V
2413	4822 121 10853	22nF 5% 630V
2417	2022 333 00091	680nF 10% 250V
2418	2022 333 00163	360nF 5% 250V
2419	2022 333 00087	510nF 5% 250V
2419	2038 301 00312	1.2µF 5% 250V
2425	5322 126 11583	10nF 10% 50V 0603
2427	5322 122 31866	6.8nF 10% 63V
2431	4822 126 13185	680pF 10% 500V
2432	2238 586 59812	100nF 20% 50V 0603
2448	2238 930 55618	470pF 200V
2449	4822 124 80791	470µF 20% 16V
2450	4822 121 40434	330nF 10% 100V
2451	4822 121 40434	330nF 10% 100V
2452	4822 126 14238	2.2nF 50V 0603
2453	4822 126 14238	2.2nF 50V 0603
2454	2020 012 00037	2200µF 20% 16V
2455	4822 122 32542	47nF 10% 63V
2456	4822 124 41828	1µF 20% 250V
2457	2238 930 55618	470pF 200V
2459	2238 930 55618	470pF 200V
2460	2020 012 00037	2200µF 20% 16V
2461	4822 124 41751	47µF 20% 50V
2462	2020 552 96683	220nF 10% 50V
2463	2020 552 96683	220nF 10% 50V
2464	2222 780 19867	2.2µF 16V 0805
2465	2222 780 19867	2.2µF 16V 0805
2466	2020 557 00005	330pF 100V
2468	5322 121 42578	100nF 5% 250V
2469	5322 124 40641	10µF 20% 100V
2470	2222 930 56627	2.2nF 10% 200V 0805
2471	4822 126 14238	2.2nF 50V 0603
2473	4822 126 14238	2.2nF 50V 0603
2476	4822 122 33177	10nF 20% 50V
2477	2238 580 15637	12nF 10% 50V 0805
2478	4822 126 14241	330pF 0603 50V
2479	2020 552 96275	12nF 10% 50V 0603
2488	4822 121 51319	1µF 10% 63V
2489	4822 124 40248	10µF 20% 63V
2492	2238 930 55618	470pF 200V
2493	2238 930 55618	470pF 200V
2494	2238 930 55618	470pF 200V
2495	2020 552 96424	100nF 10% 50V 0603
2497	4822 126 13883	220pF 5% 50V
2498	4822 126 14585	100nF 10% 0805 50V
2499	4822 126 14585	100nF 10% 0805 50V
2500	2222 338 22474	470nF 20% 275V
2501	4822 126 12793	2.2nF 10% 2kV
2503	4822 126 12793	2.2nF 10% 2kV
2504	4822 126 12793	2.2nF 10% 2kV
2505	2020 024 90773	330µF 400V
2506	4822 121 10798	33nF 5% 400V
2508	2222 338 22104	100nF 20% 275V
2509	4822 126 14335	1nF 10% 0805 100V
2510	4822 124 81151	22µF 50V
2511	4822 124 81151	22µF 50V
2512	2238 586 59812	100nF 20% 50V 0603
2513	4822 126 13881	470pF 5% 50V
2514	4822 126 13882	1.5nF 10% 2kV
2515	5322 126 11578	1nF 10% 50V 0603
2516	2238 586 59812	100nF 20% 50V 0603
2517	5322 126 11578	1nF 10% 50V 0603
2519	4822 126 13881	470pF 5% 50V
2520	2238 586 59812	100nF 20% 50V 0603
2521	3198 017 34730	47nF 16V 0603
2522	4822 126 13881	470pF 5% 50V
2523	4822 126 13682	100pF 5% 1kV
2526	2020 552 94427	100pF 5% 50V
2528	4822 121 51252	470nF 5% 63V
2535	2020 021 00092	4700µ 6.3V
2536	4822 124 81144	1000µF 16V
2538	5322 126 11578	1nF 10% 50V 0603
2539	4822 122 31177	470pF 10% 500V
2541	4822 124 40433	47µF 20% 25V
2542	2020 554 90199	1.5nF 250V
2543	2238 586 59812	100nF 20% 50V 0603
2544	4822 126 10206	2.2nF 10% 500V
2546	2020 552 00183	2.2µF 10% 6.3V 0603
2551	4822 126 13449	1nF 10% 2kV
2552	2020 021 00112	150µ 160V
2553	4822 126 14226	82pF 5% 50V 0603
2561	5322 122 32331	1nF 10% 100V
2562	4822 124 12417	2200µF 20% 25V
2563	4822 124 12417	2200µF 20% 25V
2564	2222 580 15649	100nF 10% 50V 0805
2565	5322 122 32331	1nF 10% 100V
2570	2252 811 95017	470pF 10% 250V
2571	3198 017 31530	15nF 20% 50V 0603
2572	5322 126 11583	10nF 10% 50V 0603
2578	4822 126 14238	2.2nF 50V 0603
2582	4822 124 22726	4.7µF 20% 35V
2583	2020 552 96637	10µF 10% 6.3V 0805
2584	2020 021 91528	560µF 20% 6V3
2591	2020 552 00027	4.7µF 2% 6.3V 0603
2676	4822 124 40769	4.7µF 20% 100V
2682	3198 017 41050	1µF 10V 0603
2975	4822 126 13883	220pF 5% 50V
2976	4822 126 13883	220pF 5% 50V
2986	2020 552 96424	100nF 10% 50V 0603
2987	2020 552 96424	100nF 10% 50V 0603
2988	2020 552 96424	100nF 10% 50V 0603
2989	4822 126 13879	220nF +80-20% 16V
2990	3198 016 31020	1nF 25V 0603
2991	4822 124 80604	47µF 20% 50V
2992	4822 126 13879	220nF +80-20% 16V
2993	3198 016 31020	1nF 25V 0603
2994	3198 017 34730	47nF 16V 0603
2995	3198 017 34730	47nF 16V 0603
2996	3198 017 34730	47nF 16V 0603
2997	3198 017 34730	47nF 16V 0603
2998	4822 124 80604	47µF 20% 50V

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3241	4822 051 30101	100Ω 5% 0.062W
3242	4822 051 30101	100Ω 5% 0.062W
3305	4822 052 10108	1Ω 5% 0.33W
3306	4822 052 10568	5.6Ω 5% 0.33W
3306	4822 052 11688	6Ω8 5% 0.5W
3307	4822 052 10568	5.6Ω 5% 0.33W
3307	4822 052 11338	3.3Ω 5% 0,5W
3317	4822 050 11002	1kΩ 1% 0.4W
3318	4822 052 10109	10Ω 5% 0.33W
3319	4822 051 30154	150kΩ 5% 0.062W
3320	4822 051 30223	22kΩ 5% 0.062W
3321	4822 051 30273	27kΩ 5% 0.062W
3322	4822 051 30154	150kΩ 5% 0.062W
3325	3198 021 31820	1.8kΩ 5% 0.062W 0603
3331	4822 116 52175	100Ω 5% 0.5W
3332	3198 013 04710	470Ω 20% 0.5W
3333	4822 116 52175	100Ω 5% 0.5W
3334	3198 013 04710	470Ω 20% 0.5W
3335	4822 116 52175	100Ω 5% 0.5W
3336	3198 013 04710	470Ω 20% 0.5W
3337	2322 242 13104	100kΩ 20W
3338	4822 051 30222	2.2kΩ 5% 0.062W
3339	4822 051 30272	2.7kΩ 5% 0.062W
3340	4822 051 30102	1kΩ 5% 0.062W
3341	2322 242 13104	100kΩ 20W
3342	4822 051 30272	2.7kΩ 5% 0.062W
3343	4822 051 30222	2.2kΩ 5% 0.062W
3344	4822 050 11002	1kΩ 1% 0.4W
3345	4822 050 23309	33Ω 1% 0,6W
3347	3198 013 01520	1.5kΩ 20% 0.5W
3348	4822 050 11002	1kΩ 1% 0.4W
3350	4822 116 52244	15kΩ 5% 0.5W
3351	2306 207 03151	150Ω 5% 0.5W
3352	2322 242 13104	100kΩ 20W
3353	4822 051 30222	2.2kΩ 5% 0.062W
3354	4822 051 30272	2.7kΩ 5% 0.062W
3355	4822 051 30102	1kΩ 5% 0.062W
3357	2122 552 00004	1mA 18V 0603
3359	4822 051 30682	6.8Ω 5% 0.062W
3360	4822 051 30221	220Ω 5% 0.062W

3361	4822 050 24701	470Ω 1% 0.6W
3362	2120 108 94133	R Fuse 10Ω
3363	4822 051 30561	560Ω 5% 0.062W
3364	4822 051 20108	1Ω 5% 0.1W
3365	4822 051 30472	4.7Ω 5% 0.062W
3366	4822 051 30683	68kΩ 5% 0.062W
3367	4822 116 52297	68kΩ 5% 0.5W
3368	4822 051 30561	560Ω 5% 0.062W
3370	4822 051 20108	1Ω 5% 0.1W
3371	2312 915 11002	1kΩ 1% 0.5W
3372	2312 915 11002	1kΩ 1% 0.5W
3373	2322 257 41152	1.5kΩ 5W
3375	4822 051 30681	680Ω 5% 0.062W
3377	4822 051 30272	2.7kΩ 5% 0.062W
3378	4822 051 30221	220Ω 5% 0.062W
3380	4822 051 30222	2.2kΩ 5% 0.062W
3381	4822 051 30222	2.2kΩ 5% 0.062W
3385	4822 051 30681	680Ω 5% 0.062W
3389	2120 108 94132	1Ω 1206
3392	4822 051 30271	270Ω 5% 0.062W
3393	4822 051 30109	10Ω 5% 0.062W
3394	4822 051 30472	4.7Ω 5% 0.062W
3395	4822 116 52219	330Ω 5% 0.5W
3396	3198 021 31820	1.8kΩ 5% 0.062W 0603
3397	2122 552 00004	1mA 18V 0603
3401	4822 050 24703	47kΩ 1% 0.6W
3402	4822 116 52219	330Ω 5% 0.5W
3403	4822 050 11002	1kΩ 1% 0.4W
3408	4822 117 13632	100kΩ 1% 0603 0.62W
3410	4822 051 30221	220Ω 5% 0.062W
3411	4822 051 30102	1kΩ 5% 0.062W
3413	2122 101 01386	1kΩ 5% CTR 0.25W
3414	4822 050 24708	4.7Ω 1% 0.6W
3415	4822 050 24708	4.7Ω 1% 0.6W
3416	4822 051 20479	47Ω 5% 0.1W
3417	4822 051 30684	680kΩ 5% 0.062W
3418	4822 050 11002	1kΩ 1% 0.4W
3418	4822 116 52269	3.3kΩ 5% 0.5W
3419	4822 050 24708	4.7Ω 1% 0.6W
3421	4822 116 52182	15Ω 5% 0.5W
3425	4822 050 21004	100kΩ 1% 0.6W
3425	4822 050 28203	82kΩ 1% 0.6W
3426	4822 052 10398	3.9Ω 5% 0.33W
3432	4822 050 24708	4.7Ω 1% 0.6W
3433	4822 053 12279	27Ω 5% 3W
3450	4822 052 10828	8.2Ω 5% 0.33W
3451	4822 050 24708	4.7Ω 1% 0.6W
3452	2138 112 01568	5.6Ω 5% 0805
3455	4822 052 11108	1Ω 5% 0.5W
3456	2306 207 03277	0Ω
3458	4822 052 11478	4.7Ω 5% 0.5W
3459	4822 051 30102	1kΩ 5% 0.062W
3461	4822 051 30152	1.5Ω 5% 0.062W
3463	4822 051 30152	1.5Ω 5% 0.062W
3466	4822 052 10568	5.6Ω 5% 0.33W
3467	4822 116 83872	220Ω 5% 0.5W
3468	4822 116 83872	220Ω 5% 0.5W
3470	3198 039 27080	2.7Ω 1%
3471	3198 039 27080	2.7Ω 1%
3471	4822 050 22208	2.2Ω 1% 0.6W
3472	4822 050 22208	2.2Ω 1% 0.6W
3473	2322 194 63109	10Ω 5% 2W
3477	4822 116 52231	820Ω 5% 0.5W
3479	4822 051 30102	1kΩ 5% 0.062W
3480	4822 051 30183	18kΩ 5% 0.062W
3480	4822 051 30683	68kΩ 5% 0.062W
3485	4822 052 10228	2.2Ω 5% 0.33W
3486	4822 052 10108	1Ω 5% 0.33W
3487	2120 105 00041	820Ω 5% 2W
3487	4822 053 11102	1KΩ 5% 2W
3488	4822 053 20224	220KΩ 5% 0.25W
3490	4822 050 21501	150Ω 1% 0.6W
3491	4822 051 30273	27kΩ 5% 0.062W
3491	4822 051 30683	68kΩ 5% 0.062W
3492	4822 116 52283	4.7kΩ 5% 0.5W
3493	4822 052 11228	2R20 5% 0,5W
3494	4822 116 21239	VDR 1mA/612V
3495	4822 116 21239	VDR 1mA/612V
3499	4822 116 52285	470kΩ 5% 0.5W
3502	4822 116 83872	220Ω 5% 0.5W
3503	4822 252 11215	DSP301N-A21F
3504	4822 053 21155	1.5MΩ 5% 0.5W
3505	2122 550 00171	1mΩ 612V
3508	3198 013 04710	470Ω 20% 0.5W
3510	2122 612 00055	4.7Ω 3W
3511	4822 050 24708	4.7Ω 1% 0.6W
3512	4822 117 11817	1.2kΩ 1% 0.0625W
3513	4822 052 10222	2.2kΩ 5% 0.33W
3514	4822 052 10479	47Ω 5% 0.33W
3516	3198 012 11570	0.15Ω 5% 1W
3517	2322 704 63004	300KΩ
3518	4822 051 30332	3.3Ω 5% 0.062W
3519	4822 116 52244	15kΩ 5% 0.5W

3520	3198 012 11570	0.15Ω 5% 1W
3521	4822 117 11817	1.2kΩ 1% 0.0625W
3522	4822 051 30563	56kΩ 5% 0.062W
3523	2122 663 00018	4.7Ω 20%
3524	4822 116 52269	3.3kΩ 5% 0.5W
3525	2312 915 13004	300kΩ
3526	2322 750 61501	150Ω 1206
3527	4822 117 12925	47kΩ 1% 0.063W 0603
3528	4822 051 30105	1MΩ 5% 0.062W
3529	4822 053 20155	1.5MΩ 5% 0.25W
3530	4822 051 30563	56kΩ 5% 0.062W
3531	4822 050 11002	1kΩ 1% 0.4W
3532	4822 051 20158	1.5Ω 5% 0.1W
3533	4822 051 20128	1R20 5% 0,1W
3534	2322 734 63309	33Ω 1% 0.1W 0805
3535	4822 052 11108	1Ω 5% 0.5W
3536	4822 052 10221	220Ω 5% 0.33W
3540	4822 051 30683	68kΩ 5% 0.062W
3541	4822 117 12925	47kΩ 1% 0.063W 0603
3542	4822 051 30681	680Ω 5% 0.062W
3543	4822 051 30103	10kΩ 5% 0.062W
3544	2322 704 62202	2.2kΩ 1% 0603
3545	2322 704 62202	2.2kΩ 1% 0603
3546	4822 051 30683	68kΩ 5% 0.062W
3549	4822 117 12925	47kΩ 1% 0.063W 0603
3550	4822 116 52269	3.3kΩ 5% 0.5W
3551	4822 051 30223	22kΩ 5% 0.062W
3553	2322 704 61803	18kΩ 1% 0603
3554	4822 051 30103	10kΩ 5% 0.062W
3563	4822 116 83872	220Ω 5% 0.5W
3565	4822 051 30273	27kΩ 5% 0.062W
3567	4822 051 30154	150kΩ 5% 0.062W
3568	4822 117 12925	47kΩ 1% 0.063W 0603
3571	4822 116 52228	680Ω 5% 0.5W
3573	4822 051 30153	15kΩ 5% 0.062W
3574	2322 702 60184	180kΩ 5% 0603
3575	4822 050 28203	82kΩ 1% 0.6W
3576	5322 117 13034	1.5kΩ 1% 0.063W 0603
3579	4822 116 52256	2.2kΩ 5% 0.5W
3580	4822 117 12891	220kΩ 1%
3588	4822 051 30334	330kΩ 5% 0.062W
3589	4822 051 30103	10kΩ 5% 0.062W
3593	4822 051 30103	10kΩ 5% 0.062W
3594	4822 051 30223	22kΩ 5% 0.062W
3595	4822 117 13632	100kΩ 1% 0603 0.62W
3596	4822 051 30392	3.9Ω 5% 0.063W 0603
3597	4822 117 12891	220kΩ 1%
3598	4822 053 20334	330kΩ 5% 0.25W
3688	4822 051 30103	10kΩ 5% 0.062W
3985	4822 051 30103	10kΩ 5% 0.062W
3988	4822 051 30123	12kΩ 5% 0.1W
3989	4822 051 30109	10Ω 5% 0.062W
3991	4822 051 30103	10kΩ 5% 0.062W
3992	4822 051 30123	12kΩ 5% 0.1W
3993	4822 051 30109	10Ω 5% 0.062W
3998	4822 117 11817	1.2kΩ 1% 0.0625W
4303	4822 051 30008	Jumper 0603
4304	4822 051 30008	Jumper 0603
4305	4822 051 30008	Jumper 0603
4306	4822 051 30008	Jumper 0603
4307	4822 051 30008	Jumper 0603
4308	4822 051 30008	Jumper 0603
4309	4822 051 30008	Jumper 0603
4310	4822 051 20008	Jumper 0805
4321	4822 051 30008	Jumper 0603
4322	4822 051 20008	Jumper 0805
4330	4822 051 30008	Jumper 0603
4402	4822 051 30008	Jumper 0603
4403	4822 051 30008	Jumper 0603
4420	4822 051 20008	Jumper 0805
4421	4822 051 30008	Jumper 0603
4501	4822 051 20008	Jumper 0805
4550	4822 051 30008	Jumper 0603
4685	4822 051 30008	Jumper 0603
4723	4822 051 30008	Jumper 0603
4905	4822 051 20008	Jumper 0805
4973	4822 051 20008	Jumper 0805
4974	4822 051 20008	Jumper 0805
4985	4822 051 30008	Jumper 0603

5250	2422 549 43062	Bead 600Ω at 100MHz
5251	2422 549 43062	Bead 600Ω at 100MHz
5303	4822 157 11867	5.6µH 5%
5304	4822 526 10704	Bead 50 Ω at 100MHz
5308	4822 157 11867	5.6µH 5%
5339	4822 526 10704	Bead 50 Ω at 100MHz
5361	4822 157 11411	Bead 80Ω at 100MHz
5401	3104 308 20471	Linearity coil 28°
5401	3104 308 20591	Linearity coil 32°
5402	2422 531 00057	SD12404-02 Y
5406	2422 531 02435	C948-02

5408	2422 531 02357	Bridge coil W7132-004Y
5410	2422 536 00059	12µH 10%
5411	4822 157 71097	0.56µH 10%
5450	2422 531 00079	UU 1372.7077D
5450▲	2422 531 00081	UU 1372.0130A
5452	4822 157 51462	10µH 10%
5453	4822 157 11771	0.09µH 10%
5456	4822 526 10704	Bead 50 Ω at 100MHz
5500	4822 157 10476	DMF-2820H
5501	4822 157 11523	Line filter 5mH/2A
5502	2422 549 45296	Mains harm. filter 38mH
5511	4822 526 10704	Bead 50 Ω at 100MHz
5512	2422 531 02632	SS42316-0
5532	4822 526 10704	Bead 50 Ω at 100MHz
5551	4822 526 10704	Bead 50 Ω at 100MHz
5552	4822 157 71401	27µH
5561	4822 526 10704	Bead 50 Ω at 100MHz
5562	4822 526 10704	Bead 50 Ω at 100MHz
5564	2422 535 94637	4.7µH 20% LHL08
5565	4822 157 11411	Bead 80Ω at 100MHz
5566	4822 157 11411	Bead 80Ω at 100MHz
5567	4822 157 11411	Bead 80Ω at 100MHz

6234	9322 077 99685	BZX384-B33-V
6307	4822 130 11416	PDZ6.8B
6325	4822 130 10838	UDZ3.3B
6331	9322 197 45703	BAV21WS
6332	9322 197 45703	BAV21WS
6333	9322 197 45703	BAV21WS
6334	4822 130 10838	UDZ3.3B
6361	4822 130 11397	BAS316
6362	4822 130 11397	BAS316
6403	9322 185 83668	SM ES1D
6404	9322 169 61687	DMV1500M
6405	4822 130 11397	BAS316
6409	4822 130 11397	BAS316
6410	4822 130 11397	BAS316
6411	4822 130 11397	BAS316
6452	4822 130 31607	RGP10D
6453	9334 939 60673	RGP10G
6456	5322 130 31938	BYV27-200
6457	5322 130 31938	BYV27-200
6458	9340 548 69115	PDZ27B
6459	9340 548 69115	PDZ27B
6461	9322 128 65685	RS1G
6464	9340 548 69115	PDZ27B
6465	9340 260 20115	BAW56W
6466	9322 185 83668	SM ES1D
6469	3139 120 52021	BYV29X-500
6471	4822 130 31607	RGP10D
6474	4822 130 34379	BZX79-B27
6476	5322 130 32296	BZV85-C10
6478	4822 130 10837	UDZS8.2B
6500	3198 010 10640	Bridge coil GBU4K
6509	4822 130 31607	RGP10D
6511	4822 130 31607	RGP10D
6512	4822 130 11397	BAS316
6514	4822 130 11397	BAS316
6532	9322 197 45703	BAV21WS
6533	9322 197 45703	BAV21WS
6536	9322 212 98673	SB260
6538	4822 130 11397	BAS316
6539	9322 212 82685	UDZS13B
6540	4822 130 11152	UDZ18B
6541	9322 129 41685	BZM55-C12
6548	9322 161 46687	STPS745FP
6551	9337 443 80127	BYT28-500
6562	9322 161 78682	SB360L-7024
6563	9322 161 78682	SB360L-7024
6564	4822 130 11397	BAS316
6565	4822 130 10837	UDZS8.2B
6567	4822 130 11397	BAS316
6575	4822 130 31878	1N4003G
6578	4822 130 11397	BAS316
6581	9322 197 45703	BAV21WS
6682	4822 130 10838	UDZ3.3B
6684	9322 163 91685	BZX384-C6V2

7330	4822 209 33365	TDA6111Q/N4
7331	4822 130 60373	BC856B
7332	4822 130 41246	BC327-25
7333	4822 130 40981	BC337-25
7340	4822 209 33365	TDA6111Q/N4
7350	4822 209 33365	TDA6111Q/N4
7361	9322 130 60159	BC846B
7362	4822 130 60373	BC856B
7363	9322 195 05687	KTB631KY
7364	9322 195 14687	KTD600KY

7365	4822 130 60887	BF840
7366	9352 628 51112	TDA8941p/N1
7403	4822 130 44568	BC557B
7404	9340 547 13215	BSH103
7405	9340 591 84127	ON5277
7406	9322 191 77687	STP6NK60ZFP
7406	9322 194 27687	STP3NK60ZFP
7407	4822 130 10255	MUN2213
7455	9352 637 54112	TDA4863JV1
7510	9352 720 43118	TEA1506T/N1
7511	9352 720 43118	TEA1506T/N1
7512	9322 229 41687	FET STF8NK85Z
7513	8238 274 02070	TCET1103G
7516	8238 274 02070	TCET1103G
7517	5322 130 60159	BC846B
7525	9322 194 21687	STP5NK60ZFP
7532	4822 130 60373	BC856B
7541	4822 130 60373	BC856B
7542	4822 209 14933	TL431IZ
7545	9322 179 08685	SI2305DS
7547	4822 130 11155	PDTC114ET
7548	4822 130 11155	PDTC114ET
7549	4822 130 62343	IMX1
7561	3198 010 42310	BC847BW
7567	5322 130 60159	BC846B
7571	4822 209 14933	TL431IZ
7573	4822 130 11155	PDTC114ET
7990	4822 209 32641	TDA2616Q
7991	4822 130 63732	MMUN2212

Software

0800	3139 127 05993	NVM
0801	3139 127 06002	µP Flash
0802	3139 127 06012	HDMI

Small Signal Board [B]

Various

1000	3139 147 20911	Tuner UV1316E/A I-4
1002	4822 242 81436	Filter OFWK3953M
1003	2422 549 44341	38.9MHz OFWK9656M
1004	4822 267 10973	Connector 1p
1060	2422 543 01386	Xtal 4MHz 20p
1101	2422 026 05789	Socket Cinch 9p f
1150	4822 267 10771	Socket 2 x SCART
1201	2422 543 01526	Xtal 10MHz 12p NX8045
1205	4822 267 10837	Connector 5p
1285	2422 025 19517	Connector 6p Bk m
1300	2422 033 00606	Socket HDMI 19p f
1301	2422 543 01517	Xtal 28M322 18p NX5032
1302	2422 025 18381	Connector 2p m
1400	2422 025 18739	Connector 5p m
1401	2422 540 98456	Resonator 12MHz
1580	2422 025 18741	Connector 6p m
1581	2422 025 18742	Connector 7p m
1582	2422 025 18736	Connector 12p m
1586	2422 025 18738	Connector 3p m
1587	2422 025 19515	Connector 3p m
1600	4822 267 10459	Connector 3p
1721	2422 543 01374	Xtal 14.316MHz
1901	2422 543 01461	Xtal 18.432MHz 12p

2000	4822 124 23002	10µF 16V
2001	3198 024 44730	47nF 50V 0603
2002	3198 030 71090	10µF 20% 35V
2003	4822 124 11767	470µF 20% 25V
2004	2238 586 59812	100nF 20% 50V 0603
2005	5322 126 11583	10nF 10% 50V 0603
2060	3198 017 44740	470nF 10V 0603
2061	3198 017 42240	220nF 16V Y5V 0603
2062	4822 126 14247	1.5nF 50V 0603
2063	4822 122 33761	22pF 5% 50V
2065	2238 586 59812	100nF 20% 50V 0603
2066	5322 126 11583	10nF 10% 50V 0603
2067	2020 552 96823	10µF 16V
2068	2238 586 59812	100nF 20% 50V 0603
2069	3198 017 44740	470nF 10V 0603
2070	5322 126 11583	10nF 10% 50V 0603
2071	5322 126 11583	10nF 10% 50V 0603
2072	4822 126 14315	390pF 5% 50V 0603
2101	3198 016 31020	1nF 25V 0603
2102	4822 126 14241	330pF 0603 50V
2103	4822 126 14491	2.2µF 10V 0805
2104	3198 016 31020	1nF 25V 0603
2105	4822 126 14241	330pF 0603 50V
2106	4822 126 14491	2.2µF 10V 0805

2107	2020 552 96823	10µF 16V
2108	2020 552 96823	10µF 16V
2109	2020 552 96823	10µF 16V
2110	2020 552 96823	10µF 16V
2112	5322 126 11583	10nF 10% 50V 0603
2113	2020 552 96823	10µF 16V
2114	2020 552 96823	10µF 16V
2115	3198 016 31020	1nF 25V 0603
2116	4822 126 14241	330pF 0603 50V
2117	4822 126 14491	2.2µF 10V 0805
2118	3198 016 31020	1nF 25V 0603
2119	4822 126 14241	330pF 0603 50V
2120	4822 126 14491	2.2µF 10V 0805
2121	3198 016 31020	1nF 25V 0603
2122	4822 126 14241	330pF 0603 50V
2123	4822 126 14491	2.2µF 10V 0805
2124	3198 016 31020	1nF 25V 0603
2125	4822 126 14241	330pF 0603 50V
2126	4822 126 14491	2.2µF 10V 0805
2128	2020 552 96823	10µF 16V
2150	4822 126 14241	330pF 0603 50V
2151	4822 126 14508	180pF 5% 50V 0603
2152	4822 126 14241	330pF 0603 50V
2153	4822 126 14508	180pF 5% 50V 0603
2155	2020 552 00183	2.2µF 10% 6.3V 0603
2157	2020 552 00183	2.2µF 10% 6.3V 0603
2162	4822 126 14241	330pF 0603 50V
2163	4822 126 14508	180pF 5% 50V 0603
2164	4822 126 14241	330pF 0603 50V
2165	4822 126 14508	180pF 5% 50V 0603
2167	2020 552 00183	2.2µF 10% 6.3V 0603
2168	2238 586 59812	100nF 20% 50V 0603
2169	2020 552 00183	2.2µF 10% 6.3V 0603
2176	2238 586 59812	100nF 20% 50V 0603
2177	2238 586 59812	100nF 20% 50V 0603
2201	2238 586 59812	100nF 20% 50V 0603
2202	3198 016 31590	15pF 10% 50V 0603
2203	3198 016 31590	15pF 10% 50V 0603
2204	2020 552 94427	100pF 5% 50V
2205	2020 552 96823	10µF 16V
2206	3198 016 31020	1nF 25V 0603
2207	2020 552 94427	100pF 5% 50V
2208	2020 552 94427	100pF 5% 50V
2209	2020 552 94427	100pF 5% 50V
2210	2020 552 94427	100pF 5% 50V
2213	2020 552 96823	10µF 16V
2214	4822 124 23002	10µF 16V
2215	2238 586 59812	100nF 20% 50V 0603
2216	2238 586 59812	100nF 20% 50V 0603
2218	2238 586 59812	100nF 20% 50V 0603
2219	2238 586 59812	100nF 20% 50V 0603
2222	5322 126 11583	10nF 10% 50V 0603
2223	5322 126 11583	10nF 10% 50V 0603
2300	5322 124 41945	22µF 20% 35V
2301	2238 586 59812	100nF 20% 50V 0603
2302	2020 021 91557	100µF 20% 16V
2303	5322 126 11583	10nF 10% 50V 0603
2304	2020 552 96823	10µF 16V
2305	2238 586 59812	100nF 20% 50V 0603
2306	2238 586 59812	100nF 20% 50V 0603
2307	2238 586 59812	100nF 20% 50V 0603
2308	2238 586 59812	100nF 20% 50V 0603
2309	3198 016 31020	1nF 25V 0603
2310	3198 016 31020	1nF 25V 0603
2311	3198 016 31020	1nF 25V 0603
2312	3198 016 31020	1nF 25V 0603
2313	3198 016 31020	1nF 25V 0603
2314	3198 016 31020	1nF 25V 0603
2315	3198 016 31020	1nF 25V 0603
2316	3198 016 31020	1nF 25V 0603
2317	2020 552 96823	10µF 16V
2318	2238 586 59812	100nF 20% 50V 0603
2319	2238 586 59812	100nF 20% 50V 0603
2320	2238 586 59812	100nF 20% 50V 0603
2321	2238 586 59812	100nF 20% 50V 0603
2322	3198 016 31020	1nF 25V 0603
2323	3198 016 31020	1nF 25V 0603
2324	3198 016 31020	1nF 25V 0603
2325	3198 016 31020	1nF 25V 0603
2326	3198 016 31020	1nF 25V 0603
2327	3198 016 31020	1nF 25V 0603
2328	2020 552 96823	10µF 16V
2329	2238 586 59812	100nF 20% 50V 0603
2330	2238 586 59812	100nF 20% 50V 0603
2331	3198 016 31020	1nF 25V 0603
2332	3198 016 31020	1nF 25V 0603
2333	3198 016 31020	1nF 25V 0603
2334	3198 016 31020	1nF 25V 0603
2335	5322 126 11583	10nF 10% 50V 0603
2336	3198 016 31020	1nF 25V 0603
2337	2238 586 59812	100nF 20% 50V 0603
2338	2020 552 96823	10µF 16V
2339	3198 016 31020	1nF 25V 0603
2340	3198 016 31020	1nF 25V 0603

2341	3198 017 41050	1µF 10V 0603
2342	3198 016 31020	1nF 25V 0603
2343	5322 126 11583	10nF 10% 50V 0603
2344	3198 017 41050	1µF 10V 0603
2345	3198 016 31020	1nF 25V 0603
2346	5322 126 11583	10nF 10% 50V 0603
2347	4822 126 14507	18pF 5% 50V 0603
2348	4822 126 14507	18pF 5% 50V 0603
2349	3198 016 31020	1nF 25V 0603
2350	3198 016 31020	1nF 25V 0603
2400	2020 552 96823	10µF 16V
2401	2238 586 59812	100nF 20% 50V 0603
2403	2238 586 59812	100nF 20% 50V 0603
2404	4822 124 80151	47µF 16V
2405	2238 586 59812	100nF 20% 50V 0603
2406	2020 552 94743	5.6nF 50V 0603
2407	4822 122 33741	10pF 10% 50V
2408	4822 126 14225	56pF 5% 50V 0603
2410	3198 016 31020	1nF 25V 0603
2412	2238 586 59812	100nF 20% 50V 0603
2413	2020 552 96823	10µF 16V
2414	2238 586 59812	100nF 20% 50V 0603
2415	3198 016 31020	1nF 25V 0603
2416	4822 126 14225	56pF 5% 50V 0603
2418	2238 586 59812	100nF 20% 50V 0603
2420	2238 586 59812	100nF 20% 50V 0603
2421	4822 126 14225	56pF 5% 50V 0603
2423	4822 121 70159	0.1µF 16V
2424	2020 552 94427	100pF 5% 50V
2425	2020 552 94427	100pF 5% 50V
2426	4822 126 11785	47pF 5% 50V 0603
2427	4822 126 11669	27pF 5% 50V 0603
2428	4822 126 11669	27pF 5% 50V 0603
2429	3198 017 34730	47nF 16V 0603
2430	2020 552 96807	1µF 10V 0603
2432	3198 017 41050	1µF 10V 0603
2433	2238 586 59812	100nF 20% 50V 0603
2434	4822 126 13193	4.7nF 10% 63V
2435	3198 030 82280	2.2µF 20% 50V
2436	4822 126 13881	470pF 5% 50V
2437	3198 016 38210	820pF 25V 0603
2444	3198 017 33330	33nF 20% 16V 0603
2500	2020 552 96823	10µF 16V
2502	2020 552 00183	2.2µF 10% 6.3V 0603
2503	2238 586 59812	100nF 20% 50V 0603
2506	4822 123 14018	2.2µF 10% 10V
2507	2020 552 96822	10µF 10% 25V 1210
2508	2020 552 96822	10µF 10% 25V 1210
2509	2238 916 15641	22nF 10% 25V 0603
2510	4822 126 13883	220pF 5% 50V
2511	2022 031 00373	470µF 20% 16V
2512	2022 031 00373	470µF 20% 16V
2513	2238 586 59812	100nF 20% 50V 0603
2515	2020 552 96823	10µF 16V
2560	2238 586 59812	100nF 20% 50V 0603
2587	3198 017 44740	470nF 10V 0603
2600	2020 552 96637	10µF 10% 6.3V 0805
2601	2238 586 59812	100nF 20% 50V 0603
2602	2238 586 59812	100nF 20% 50V 0603
2603	2238 586 59812	100nF 20% 50V 0603
2604	2238 586 59812	100nF 20% 50V 0603
2605	2020 552 96823	10µF 16V
2606	2020 552 96637	10µF 10% 6.3V 0805
2607	2238 586 59812	100nF 20% 50V 0603
2608	2238 586 59812	100nF 20% 50V 0603
2609	2238 586 59812	100nF 20% 50V 0603
2610	2238 586 59812	100nF 20% 50V 0603
2611	2020 552 96823	10µF 16V
2614	2020 552 96823	10µF 16V
2615	2020 552 96637	10µF 10% 6.3V 0805
2616	2238 586 59812	100nF 20% 50V 0603
2617	2238 586 59812	100nF 20% 50V 0603
2618	3198 017 34730	47nF 16V 0603
2619	3198 017 34730	47nF 16V 0603
2620	3198 017 34730	47nF 16V 0603
2622	2238 786 55648	82nF 10% 16V 0603
2623	2238 586 15635	8.2nF 10% 50V 0603
2624	2238 586 59812	100nF 20% 50V 0603
2625	2020 552 96823	10µF 16V
2626	2238 586 59812	100nF 20% 50V 0603
2627	2020 552 96823	10µF 16V
2635	4822 124 11131	47µF 6.3V
2636	4822 124 11131	47µF 6.3V
2650	5322 126 11583	10nF 10% 50V 0603
2651	5322 126 11583	10nF 10% 50V 0603
2652	5322 126 11583	10nF 10% 50V 0603
2653	5322 126 11583	10nF 10% 50V 0603
2654	5322 126 11583	10nF 10% 50V 0603
2655	5322 126 11583	10nF 10% 50V 0603
2656	5322 126 11583	10nF 10% 50V 0603
2657	5322 126 11583	10nF 10% 50V 0603
2658	5322 126 11583	10nF 10% 50V 0603
2659	5322 126 11583	10nF 10% 50V 0603
2660	5322 126 11583	10nF 10% 50V 0603

2661	5322 126 11583	10nF 10% 50V 0603	
2662	5322 126 11583	10nF 10% 50V 0603	
2663	5322 126 11583	10nF 10% 50V 0603	
2664	5322 126 11583	10nF 10% 50V 0603	
2665	5322 126 11583	10nF 10% 50V 0603	
2666	5322 126 11583	10nF 10% 50V 0603	
2680	5322 126 11583	10nF 10% 50V 0603	
2681	5322 126 11583	10nF 10% 50V 0603	
2682	5322 126 11583	10nF 10% 50V 0603	
2701	2238 586 59812	100nF 20% 50V 0603	
2702	2238 586 59812	100nF 20% 50V 0603	
2703	5322 126 11583	10nF 10% 50V 0603	
2704	2238 586 59812	100nF 20% 50V 0603	
2705	2238 586 59812	100nF 20% 50V 0603	
2706	5322 126 11583	10nF 10% 50V 0603	
2707	5322 126 11583	10nF 10% 50V 0603	
2708	5322 126 11583	10nF 10% 50V 0603	
2709	5322 126 11583	10nF 10% 50V 0603	
2710	5322 126 11583	10nF 10% 50V 0603	
2711	4822 126 13193	4.7nF 10% 63V	
2712	4822 126 13193	4.7nF 10% 63V	
2713	2238 586 59812	100nF 20% 50V 0603	
2714	2238 586 59812	100nF 20% 50V 0603	
2715	5322 126 11583	10nF 10% 50V 0603	
2716	2020 552 96823	10µF 16V	
2717	2020 552 96823	10µF 16V	
2718	2020 552 96823	10µF 16V	
2719	2238 586 59812	100nF 20% 50V 0603	
2720	4822 126 14225	56pF 5% 50V 0603	
2721	2238 586 59812	100nF 20% 50V 0603	
2722	2238 586 15628	2.7nF 10% 50V 0603	
2723	2020 552 96749	20pF 5% 50V 0603	
2724	2020 552 96749	20pF 5% 50V 0603	
2725	2238 586 59812	100nF 20% 50V 0603	
2726	2238 586 59812	100nF 20% 50V 0603	
2727	2238 586 59812	100nF 20% 50V 0603	
2728	2238 586 59812	100nF 20% 50V 0603	
2729	2238 586 59812	100nF 20% 50V 0603	
2730	2020 552 96823	10µF 16V	
2731	2238 586 59812	100nF 20% 50V 0603	
2732	2020 552 96747	30pF 5% 50V 0603	
2733	2238 586 59812	100nF 20% 50V 0603	
2734	2238 586 59812	100nF 20% 50V 0603	
2735	2238 586 59812	100nF 20% 50V 0603	
2736	2238 586 59812	100nF 20% 50V 0603	
2737	2238 586 59812	100nF 20% 50V 0603	
2738	2238 586 59812	100nF 20% 50V 0603	
2740	2238 586 59812	100nF 20% 50V 0603	
2741	2238 586 59812	100nF 20% 50V 0603	
2743	2238 586 59812	100nF 20% 50V 0603	
2744	2238 586 59812	100nF 20% 50V 0603	
2746	2238 586 59812	100nF 20% 50V 0603	
2747	2238 586 59812	100nF 20% 50V 0603	
2748	2238 586 59812	100nF 20% 50V 0603	
2749	2020 552 96823	10µF 16V	
2750	2238 586 59812	100nF 20% 50V 0603	
2751	2022 552 05636	10µF 10% 16V 1210	
2752	2020 552 96823	10µF 16V	
2753	2238 586 59812	100nF 20% 50V 0603	
2754	2238 586 59812	100nF 20% 50V 0603	
2755	2238 586 59812	100nF 20% 50V 0603	
2756	2238 586 59812	100nF 20% 50V 0603	
2757	2238 586 59812	100nF 20% 50V 0603	
2758	2238 586 59812	100nF 20% 50V 0603	
2759	2238 586 59812	100nF 20% 50V 0603	
2760	2238 586 59812	100nF 20% 50V 0603	
2761	2238 586 59812	100nF 20% 50V 0603	
2762	2238 586 59812	100nF 20% 50V 0603	
2763	2238 586 59812	100nF 20% 50V 0603	
2764	2238 586 59812	100nF 20% 50V 0603	
2765	2238 586 59812	100nF 20% 50V 0603	
2766	2238 586 59812	100nF 20% 50V 0603	
2767	2238 586 59812	100nF 20% 50V 0603	
2768	2238 586 59812	100nF 20% 50V 0603	
2769	2238 586 59812	100nF 20% 50V 0603	
2770	2238 586 59812	100nF 20% 50V 0603	
2771	4822 126 14221	68pF 5% 50V NP0 0603	
2772	4822 126 14221	68pF 5% 50V NP0 0603	
2773	2238 586 59812	100nF 20% 50V 0603	
2774	2020 552 96823	10µF 16V	
2775	2238 586 59812	100nF 20% 50V 0603	
2776	2020 552 96823	10µF 16V	
2777	2238 586 59812	100nF 20% 50V 0603	
2778	2020 552 96823	10µF 16V	
2779	2238 586 59812	100nF 20% 50V 0603	
2780	2020 552 96823	10µF 16V	
2781	2020 552 96823	10µF 16V	
2782	2238 586 59812	100nF 20% 50V 0603	
2783	2020 552 96823	10µF 16V	
2784	2238 586 59812	100nF 20% 50V 0603	
2785	2020 552 96823	10µF 16V	
2786	2238 586 59812	100nF 20% 50V 0603	
2787	2020 552 96823	10µF 16V	
2788	2238 586 59812	100nF 20% 50V 0603	
2789	2238 586 15628	2.7nF 10% 50V 0603	
2790	2020 552 96823	10µF 16V	
2791	2238 586 59812	100nF 20% 50V 0603	
2792	2238 586 59812	100nF 20% 50V 0603	
2794	2020 552 96823	10µF 16V	
2795	2238 586 59812	100nF 20% 50V 0603	
2796	2238 586 59812	100nF 20% 50V 0603	
2797	2238 586 59812	100nF 20% 50V 0603	
2798	2020 552 96823	10µF 16V	
2901	4822 126 14225	56pF 5% 50V 0603	
2902	4822 126 14225	56pF 5% 50V 0603	
2903	4822 126 14225	56pF 5% 50V 0603	
2906	5322 126 11578	1nF 10% 50V 0603	
2907	5322 126 11578	1nF 10% 50V 0603	
2908	5322 126 11578	1nF 10% 50V 0603	
2909	5322 126 11578	1nF 10% 50V 0603	
2910	2020 552 96823	10µF 16V	
2911	4822 126 14241	330pF 0603 50V	
2912	5322 126 11578	1nF 10% 50V 0603	
2913	5322 126 11578	1nF 10% 50V 0603	
2914	5322 126 11578	1nF 10% 50V 0603	
2915	5322 126 11578	1nF 10% 50V 0603	
2918	4822 126 13881	470pF 5% 50V	
2920	2238 586 59812	100nF 20% 50V 0603	
2921	3198 016 33380	3.3pF 50V 0603	
2922	3198 016 33380	3.3pF 50V 0603	
2923	3198 016 31020	1nF 25V 0603	
2924	3198 016 31020	1nF 25V 0603	
2925	3198 016 31020	1nF 25V 0603	
2926	3198 016 31020	1nF 25V 0603	
2927	3198 016 31020	1nF 25V 0603	
2928	3198 016 31020	1nF 25V 0603	
2929	2238 586 59812	100nF 20% 50V 0603	
2930	2020 552 96823	10µF 16V	
2931	2238 586 59812	100nF 20% 50V 0603	
2932	2020 552 96823	10µF 16V	
2933	2238 586 59812	100nF 20% 50V 0603	
2934	5322 124 41945	22µF 20% 35V	
2935	2020 552 96823	10µF 16V	
2936	3198 016 31020	1nF 25V 0603	
2937	2020 552 00132	2.2µF 10% 10V	
2938	3198 016 31020	1nF 25V 0603	
2939	2020 552 00132	2.2µF 10% 10V	
2940	3198 017 42240	220nF 16V Y5V 0603	
2941	2020 552 96823	10µF 16V	
2942	2020 552 96823	10µF 16V	
2943	2020 552 96823	10µF 16V	
2944	2238 586 59812	100nF 20% 50V 0603	
2945	2020 552 96823	10µF 16V	
2946	2020 552 96637	10µF 10% 6.3V 0805	
2947	2020 552 96637	10µF 10% 6.3V 0805	
2948	2020 552 96637	10µF 10% 6.3V 0805	
2949	2020 552 96637	10µF 10% 6.3V 0805	
2950	2238 586 59812	100nF 20% 50V 0603	
2951	2238 586 59812	100nF 20% 50V 0603	
2952	2020 552 96637	10µF 10% 6.3V 0805	
2953	2020 552 96637	10µF 10% 6.3V 0805	
2954	4822 126 14491	2.2µF 10V 0805	
2955	4822 126 14491	2.2µF 10V 0805	
2961	2238 586 59812	100nF 20% 50V 0603	
2962	4822 124 11131	47µF 6.3V	
2963	4822 124 11131	47µF 6.3V	
2964	2238 586 59812	100nF 20% 50V 0603	
2965	3198 017 41050	1µF 10V 0603	
2966	5322 126 11583	10nF 10% 50V 0603	
2967	3198 017 41050	1µF 10V 0603	
2968	5322 126 11583	10nF 10% 50V 0603	
2969	4822 124 11131	47µF 6.3V	
2970	2238 586 59812	100nF 20% 50V 0603	
2971	4822 124 23002	10µF 16V	
2972	4822 126 14491	2.2µF 10V 0805	
2973	4822 126 14491	2.2µF 10V 0805	
2974	2020 552 96637	10µF 10% 6.3V 0805	
3001	4822 051 30562	5.6kΩ 5% 0.063W 0603	
3002	3198 021 38220	8.2kΩ 5% 0.062W 0603	
3003	4822 051 30393	39kΩ 5% 0.062W	
3004	4822 051 30101	100Ω 5% 0.062W	
3005	4822 051 30682	6.8Ω 5% 0.062W	
3006	4822 051 30101	100Ω 5% 0.062W	
3007	4822 051 30222	2.2kΩ 5% 0.062W	
3008	4822 051 30222	2.2kΩ 5% 0.062W	
3060	4822 051 30221	220Ω 5% 0.062W	
3061	4822 051 30101	100Ω 5% 0.062W	
3063	4822 051 30689	68Ω 5% 0.063W 0603	
3064	4822 051 30221	220Ω 5% 0.062W	
3065	4822 051 30562	5.6kΩ 5% 0.063W 0603	
3066	4822 051 30472	4.7Ω 5% 0.062W	
3067	4822 051 30479	47Ω 5% 0.062W	
3068	4822 051 30479	47Ω 5% 0.062W	
3101	4822 051 30151	150Ω 5% 0.062W	
3102	4822 117 12925	47kΩ 1% 0.063W 0603	
3103	4822 051 30101	100Ω 5% 0.062W	
3104	4822 051 30759	75Ω 5% 0.062W	
3105	4822 051 30151	150Ω 5% 0.062W	
3106	4822 117 12925	47kΩ 1% 0.063W 0603	
3107	4822 051 30759	75Ω 5% 0.062W	
3108	4822 051 30101	100Ω 5% 0.062W	
3109	4822 051 30759	75Ω 5% 0.062W	
3110	4822 051 30221	220Ω 5% 0.062W	
3111	4822 051 30151	150Ω 5% 0.062W	
3114	4822 051 30101	100Ω 5% 0.062W	
3115	4822 051 30479	47Ω 5% 0.062W	
3116	4822 051 30479	47Ω 5% 0.062W	
3117	4822 051 30471	47Ω 5% 0.062W	
3118	4822 051 30223	22kΩ 5% 0.062W	
3120	4822 051 30222	2.2kΩ 5% 0.062W	
3121	4822 051 30561	560Ω 5% 0.062W	
3122	4822 051 30471	47Ω 5% 0.062W	
3123	4822 051 30223	22kΩ 5% 0.062W	
3124	4822 051 30151	150Ω 5% 0.062W	
3125	4822 117 12925	47kΩ 1% 0.063W 0603	
3126	4822 051 30151	150Ω 5% 0.062W	
3127	4822 117 12925	47kΩ 1% 0.063W 0603	
3128	4822 117 12891	220kΩ 1%	
3129	4822 051 30151	150Ω 5% 0.062W	
3130	4822 117 12891	220kΩ 1%	
3131	4822 117 13632	100kΩ 1% 0603 0.62W	
3132	4822 117 13632	100kΩ 1% 0603 0.62W	
3133	4822 117 13632	100kΩ 1% 0603 0.62W	
3134	4822 117 13632	100kΩ 1% 0603 0.62W	
3135	4822 117 13632	100kΩ 1% 0603 0.62W	
3136	4822 117 13632	100kΩ 1% 0603 0.62W	
3137	4822 117 13632	100kΩ 1% 0603 0.62W	
3138	4822 117 13632	100kΩ 1% 0603 0.62W	
3139	4822 051 30472	4.7Ω 5% 0.062W	
3140	4822 051 30472	4.7Ω 5% 0.062W	
3141	4822 051 30472	4.7Ω 5% 0.062W	
3142	4822 051 30472	4.7Ω 5% 0.062W	
3156	4822 051 30759	75Ω 5% 0.062W	
3157	4822 051 30759	75Ω 5% 0.062W	
3158	4822 051 30759	75Ω 5% 0.062W	
3159	4822 051 30682	6.8Ω 5% 0.062W	
3160	4822 117 12925	47kΩ 1% 0.063W 0603	
3161	4822 051 30273	27kΩ 5% 0.062W	
3162	4822 051 30101	100Ω 5% 0.062W	
3163	4822 051 30759	75Ω 5% 0.062W	
3164	4822 051 30689	68Ω 5% 0.063W 0603	
3165	4822 051 30102	1kΩ 5% 0.062W	
3168	4822 051 30101	100Ω 5% 0.062W	
3169	4822 051 30759	75Ω 5% 0.062W	
3170	4822 051 30151	150Ω 5% 0.062W	
3171	4822 117 12891	220kΩ 1%	
3172	4822 051 30151	150Ω 5% 0.062W	
3173	4822 117 12925	47kΩ 1% 0.063W 0603	
3174	4822 051 30151	150Ω 5% 0.062W	
3175	4822 117 12891	220kΩ 1%	
3176	4822 051 30151	150Ω 5% 0.062W	
3177	4822 117 12925	47kΩ 1% 0.063W 0603	
3178	4822 051 30759	75Ω 5% 0.062W	
3184	4822 051 30273	27kΩ 5% 0.062W	
3185	4822 051 30682	6.8Ω 5% 0.062W	
3186	4822 051 30479	47Ω 5% 0.062W	
3187	4822 051 30479	47Ω 5% 0.062W	
3188	4822 051 30689	68Ω 5% 0.063W 0603	
3189	4822 051 30102	1kΩ 5% 0.062W	
3191	4822 051 30759	75Ω 5% 0.062W	
3192	4822 051 30101	100Ω 5% 0.062W	
3193	4822 051 30151	150Ω 5% 0.062W	
3194	4822 117 12891	220kΩ 1%	
3195	4822 051 30151	150Ω 5% 0.062W	
3196	4822 117 12925	47kΩ 1% 0.063W 0603	
3197	4822 051 30151	150Ω 5% 0.062W	
3198	4822 117 12891	220kΩ 1%	
3199	4822 051 30151	150Ω 5% 0.062W	
3201	4822 051 30101	100Ω 5% 0.062W	
3202	4822 051 30103	10kΩ 5% 0.062W	
3203	4822 051 30109	10Ω 5% 0.062W	
3204	4822 051 30103	10kΩ 5% 0.062W	
3205	4822 051 30101	100Ω 5% 0.062W	
3206	4822 051 30101	100Ω 5% 0.062W	
3207	4822 051 30101	100Ω 5% 0.062W	
3208	4822 051 30101	100Ω 5% 0.062W	
3209	4822 051 30101	100Ω 5% 0.062W	
3210	4822 051 30103	10kΩ 5% 0.062W	
3211	4822 051 30472	4.7Ω 5% 0.062W	
3212	4822 051 30103	10kΩ 5% 0.062W	
3213	4822 051 30472	4.7Ω 5% 0.062W	
3214	4822 051 30103	10kΩ 5% 0.062W	
3215	4822 051 30101	100Ω 5% 0.062W	
3216	4822 051 30101	100Ω 5% 0.062W	
3217	4822 051 30101	100Ω 5% 0.062W	
3218	4822 051 30101	100Ω 5% 0.062W	
3219	4822 051 30103	10kΩ 5% 0.062W	
3220	4822 051 30103	10kΩ 5% 0.062W	

3221	4822 051 30103	10kΩ 5% 0.062W	
3222	4822 051 30103	10kΩ 5% 0.062W	
3223	4822 051 30101	100Ω 5% 0.062W	
3224	4822 051 30101	100Ω 5% 0.062W	
3225	4822 051 30472	4.7Ω 5% 0.062W	
3227	4822 051 30101	100Ω 5% 0.062W	
3228	4822 051 30101	100Ω 5% 0.062W	
3229	4822 051 30103	10kΩ 5% 0.062W	
3230	4822 051 30103	10kΩ 5% 0.062W	
3231	4822 051 30103	10kΩ 5% 0.062W	
3232	4822 051 30479	47Ω 5% 0.062W	
3233	4822 051 30101	100Ω 5% 0.062W	
3234	4822 051 30682	6.8Ω 5% 0.062W	
3236	4822 051 30101	100Ω 5% 0.062W	
3237	4822 051 30101	100Ω 5% 0.062W	
3238	4822 051 30101	100Ω 5% 0.062W	
3239	3198 021 31080	1Ω 5% 0603	
3240	4822 051 30472	4.7Ω 5% 0.062W	
3241	4822 051 30101	100Ω 5% 0.062W	
3242	4822 051 30472	4.7Ω 5% 0.062W	
3243	4822 051 30101	100Ω 5% 0.062W	
3245	4822 051 30103	10kΩ 5% 0.062W	
3246	4822 051 30101	100Ω 5% 0.062W	
3247	4822 117 12925	47kΩ 1% 0.063W 0603	
3248	4822 051 30101	100Ω 5% 0.062W	
3249	4822 051 30472	4.7Ω 5% 0.062W	
3250	4822 051 30101	100Ω 5% 0.062W	
3251	4822 051 30472	4.7Ω 5% 0.062W	
3252	4822 051 30472	4.7Ω 5% 0.062W	
3253	3198 021 32290	22Ω 5% 0603	
3254	4822 051 30339	33Ω 5% 0.062W	
3255	4822 051 30339	33Ω 5% 0.062W	
3256	4822 051 30101	100Ω 5% 0.062W	
3258	3198 031 13390	4 x 33Ω 5% 1206	
3259	3198 031 13390	4 x 33Ω 5% 1206	
3260	3198 031 13390	4 x 33Ω 5% 1206	
3261	3198 031 13390	4 x 33Ω 5% 1206	
3262	3198 031 13390	4 x 33Ω 5% 1206	
3263	3198 031 13390	4 x 33Ω 5% 1206	
3264	3198 031 13390	4 x 33Ω 5% 1206	
3265	4822 051 30103	10kΩ 5% 0.062W	
3266	4822 051 30103	10kΩ 5% 0.062W	
3267	4822 051 30103	10kΩ 5% 0.062W	
3268	4822 051 30103	10kΩ 5% 0.062W	
3269	4822 051 30103	10kΩ 5% 0.062W	
3271	4822 051 30101	100Ω 5% 0.062W	
3277	4822 051 30103	10kΩ 5% 0.062W	
3287	4822 117 13632	100kΩ 1% 0603 0.62W	
3288	4822 051 30103	10kΩ 5% 0.062W	
3290	4822 051 30102	1kΩ 5% 0.062W	
3292	4822 051 30101	100Ω 5% 0.062W	
3293	4822 051 30339	33Ω 5% 0.062W	
3301	4822 051 30472	4.7Ω 5% 0.062W	
3302	4822 051 30222	2.2kΩ 5% 0.062W	
3303	4822 051 30103	10kΩ 5% 0.062W	
3304	4822 051 30101	100Ω 5% 0.062W	
3305	4822 051 30103	10kΩ 5% 0.062W	
3306	4822 051 30103	10kΩ 5% 0.062W	
3307	4822 051 30105	1MΩ 5% 0.062W	
3308	4822 051 30339	33Ω 5% 0.062W	
3309	4822 051 30472	4.7Ω 5% 0.062W	
3310	4822 051 30472	4.7Ω 5% 0.062W	
3311	4822 051 30472	4.7Ω 5% 0.062W	
3312	4822 051 30339	33Ω 5% 0.062W	
3313	4822 051 30339	33Ω 5% 0.062W	
3314	4822 051 30339	33Ω 5% 0.062W	
3315	4822 051 30339	33Ω 5% 0.062W	
3316	3198 031 13390	4 x 33Ω 5% 1206	
3323	4822 051 30102	1kΩ 5% 0.062W	
3324	4822 051 30223	22kΩ 5% 0.062W	
3325	4822 051 30472	4.7Ω 5% 0.062W	
3326	4822 051 30472	4.7Ω 5% 0.062W	
3327	4822 051 30472	4.7Ω 5% 0.062W	
3328	4822 051 30472	4.7Ω 5% 0.062W	
3329	4822 051 30472	4.7Ω 5% 0.062W	
3331	4822 051 30472	4.7Ω 5% 0.062W	
3333	4822 051 30101	100Ω 5% 0.062W	
3336	4822 051 30101	100Ω 5% 0.062W	
3401	4822 051 30109	10Ω 5% 0.062W	
3402	4822 051 30101	100Ω 5% 0.062W	
3404	4822 051 30101	100Ω 5% 0.062W	
3406	4822 051 30101	100Ω 5% 0.062W	
3408	4822 051 30101	100Ω 5% 0.062W	
3410	4822 051 30393	39kΩ 5% 0.062W	
3411	4822 117 13632	100kΩ 1% 0603 0.62W	
3412	4822 051 30152	1.5Ω 5% 0.062W	
3413	4822 051 30109	10Ω 5% 0.062W	
3414	4822 051 30333	33kΩ 5% 0.062W	
3415	4822 117 13632	100kΩ 1% 0603 0.62W	
3417	4822 051 30101	100Ω 5% 0.062W	
3419	4822 051 30474	470kΩ 5% 0.062W	
3420	4822 051 30103	10kΩ 5% 0.062W	
3422	4822 051 30101	100Ω 5% 0.062W	
3423	4822 051 30109	10Ω 5% 0.062W	
3425	4822 051 30101	100Ω 5% 0.062W	
3426	4822 051 30471	47Ω 5% 0.062W	
3427	4822 051 30471	47Ω 5% 0.062W	
3428	4822 051 30101	100Ω 5% 0.062W	
3429	4822 051 30103	10kΩ 5% 0.062W	
3430	4822 051 30472	4.7Ω 5% 0.062W	
3431	4822 051 30222	2.2kΩ 5% 0.062W	
3432	4822 051 30475	4.7MΩ 5% 0.062W 0603	
3433	4822 051 30152	1.5Ω 5% 0.062W	
3436	4822 051 30102	1kΩ 5% 0.062W	
3437	4822 117 12864	82kΩ 5% 0.6W	
3438	4822 051 30334	330kΩ 5% 0.062W	
3439	4822 051 30561	560Ω 5% 0.062W	
3440	4822 051 30393	39kΩ 5% 0.062W	
3441	2322 704 62003	20kΩ 1% 0603	
3442	4822 051 30474	470kΩ 5% 0.062W	
3443	4822 117 12889	270kΩ 1% 0.063W 0603	
3444	4822 051 30222	2.2kΩ 5% 0.062W	
3445	4822 051 30334	330kΩ 5% 0.062W	
3446	4822 051 30123	12kΩ 5% 0.1W	
3447	4822 051 30102	1kΩ 5% 0.062W	
3449	4822 051 30472	4.7Ω 5% 0.062W	
3450	4822 051 30472	4.7Ω 5% 0.062W	
3457	4822 051 30222	2.2kΩ 5% 0.062W	
3458	4822 051 30101	100Ω 5% 0.062W	
3459	4822 051 30101	100Ω 5% 0.062W	
3500	4822 117 12925	47kΩ 1% 0.063W 0603	
3501	4822 051 30223	22kΩ 5% 0.062W	
3503	5322 117 13031	5.6kΩ 1% 0.063W 0603	
3504	4822 051 30472	4.7Ω 5% 0.062W	
3505	2322 704 63302	3.3kΩ 1% 0603	
3506	4822 051 30103	10kΩ 5% 0.062W	
3561	3198 021 38220	8.2kΩ 5% 0.062W 0603	
3581	4822 051 30101	100Ω 5% 0.062W	
3582	4822 051 30101	100Ω 5% 0.062W	
3583	4822 051 30472	4.7Ω 5% 0.062W	
3584	4822 051 30759	75Ω 5% 0.062W	
3606	4822 051 30222	2.2kΩ 5% 0.062W	
3607	4822 051 30222	2.2kΩ 5% 0.062W	
3608	4822 051 30272	2.7kΩ 5% 0.062W	
3609	4822 051 30339	33Ω 5% 0.062W	
3612	4822 051 30101	100Ω 5% 0.062W	
3613	4822 051 30222	2.2kΩ 5% 0.062W	
3614	4822 051 30101	100Ω 5% 0.062W	
3617	3198 031 13390	4 x 33Ω 5% 1206	
3618	3198 031 13390	4 x 33Ω 5% 1206	
3619	3198 031 13390	4 x 33Ω 5% 1206	
3620	3198 031 13390	4 x 33Ω 5% 1206	
3621	3198 031 13390	4 x 33Ω 5% 1206	
3622	3198 031 13390	4 x 33Ω 5% 1206	
3623	4822 051 30101	100Ω 5% 0.062W	
3624	4822 051 30101	100Ω 5% 0.062W	
3625	4822 051 30101	100Ω 5% 0.062W	
3626	4822 051 30339	33Ω 5% 0.062W	
3627	4822 051 30339	33Ω 5% 0.062W	
3701	4822 051 30102	1kΩ 5% 0.062W	
3702	4822 051 30102	1kΩ 5% 0.062W	
3703	2322 704 65109	51Ω 1% 0603	
3704	2322 704 65109	51Ω 1% 0603	
3705	3198 021 31080	1Ω 5% 0603	
3706	4822 117 12971	15Ω 5% 0603 0.62W	
3707	3198 031 13390	4 x 33Ω 5% 1206	
3708	3198 031 13390	4 x 33Ω 5% 1206	
3709	3198 031 13390	4 x 33Ω 5% 1206	
3710	3198 031 13390	4 x 33Ω 5% 1206	
3711	3198 031 13390	4 x 33Ω 5% 1206	
3712	3198 031 13390	4 x 33Ω 5% 1206	
3713	3198 031 13390	4 x 33Ω 5% 1206	
3714	3198 031 13390	4 x 33Ω 5% 1206	
3715	4822 051 30339	33Ω 5% 0.062W	
3716	4822 051 30339	33Ω 5% 0.062W	
3717	4822 051 30339	33Ω 5% 0.062W	
3721	4822 051 30759	75Ω 5% 0.062W	
3723	4822 051 30759	75Ω 5% 0.062W	
3725	4822 117 11817	1.2kΩ 1% 0.0625W	
3726	4822 051 30152	1.5Ω 5% 0.062W	
3727	4822 051 30759	75Ω 5% 0.062W	
3730	4822 051 30561	560Ω 5% 0.062W	
3738	4822 051 30472	4.7Ω 5% 0.062W	
3739	4822 051 30103	10kΩ 5% 0.062W	
3742	4822 051 30102	1kΩ 5% 0.062W	
3743	4822 051 30103	10kΩ 5% 0.062W	
3745	4822 051 30689	68Ω 5% 0.063W 0603	
3746	4822 051 30689	68Ω 5% 0.063W 0603	
3747	3198 031 13310	4X330Ω 5% 1206	
3748	3198 031 13310	4X330Ω 5% 1206	
3749	3198 031 13310	4X330Ω 5% 1206	
3750	3198 031 13310	4X330Ω 5% 1206	
3751	4822 051 30102	1kΩ 5% 0.062W	
3753	4822 051 30102	1kΩ 5% 0.062W	
3754	4822 051 30759	75Ω 5% 0.062W	
3755	4822 051 30759	75Ω 5% 0.062W	
3756	4822 051 30759	75Ω 5% 0.062W	
3757	3198 021 32290	22Ω 5% 0603	
3758	3198 021 32290	22Ω 5% 0603	
3759	3198 021 32290	22Ω 5% 0603	
3760	3198 021 32290	22Ω 5% 0603	
3761	3198 021 32290	22Ω 5% 0603	
3790	3198 021 32290	22Ω 5% 0603	
3791	3198 021 32290	22Ω 5% 0603	
3792	3198 021 32290	22Ω 5% 0603	
3793	3198 021 32290	22Ω 5% 0603	
3902	4822 051 30101	100Ω 5% 0.062W	
3903	4822 051 30101	100Ω 5% 0.062W	
3913	4822 051 30101	100Ω 5% 0.062W	
3914	4822 051 30101	100Ω 5% 0.062W	
3915	4822 051 30101	100Ω 5% 0.062W	
3916	4822 051 30101	100Ω 5% 0.062W	
3917	4822 051 30223	22kΩ 5% 0.062W	
3925	4822 051 30331	330Ω 5% 0.062W	
3926	4822 051 30331	330Ω 5% 0.062W	
3927	4822 051 30331	330Ω 5% 0.062W	
3928	4822 051 30331	330Ω 5% 0.062W	
3929	4822 051 30331	330Ω 5% 0.062W	
3930	4822 051 30331

5307	4822 157 11716	Bead 300Ω at 100MHz
5308	4822 157 11716	Bead 300Ω at 100MHz
5501	2422 535 94995	10µH 20%
5502	2422 536 00339	33µH 20%
5503	*2422 535 94995*	*10µH 20%*
5504	2422 549 43062	Bead 600Ω at 100MHz
5560	2422 549 43062	Bead 600Ω at 100MHz
5561	2422 549 43062	Bead 600Ω at 100MHz
5562	2422 549 43062	Bead 600Ω at 100MHz
5563	2422 549 43062	Bead 600Ω at 100MHz
5583	2422 549 43062	Bead 600Ω at 100MHz
5584	2422 549 43062	Bead 600Ω at 100MHz
5585	2422 549 43062	Bead 600Ω at 100MHz
5587	2422 549 43062	Bead 600Ω at 100MHz
5588	2422 549 43062	Bead 600Ω at 100MHz
5591	2422 549 43062	Bead 600Ω at 100MHz
5592	2422 549 43062	Bead 600Ω at 100MHz
5593	2422 549 43062	Bead 600Ω at 100MHz
5594	2422 549 43062	Bead 600Ω at 100MHz
5600	2422 549 45333	Bead 120Ω at 100MHz
5601	2422 549 45333	Bead 120Ω at 100MHz
5602	2422 549 45333	Bead 120Ω at 100MHz
5701	2422 549 44197	Bead 220Ω at 100MHz
5702	2422 549 44197	Bead 220Ω at 100MHz
5703	2422 549 44197	Bead 220Ω at 100MHz
5704	2422 549 44197	Bead 220Ω at 100MHz
5705	2422 549 44197	Bead 220Ω at 100MHz
5721	2422 549 44197	Bead 220Ω at 100MHz
5722	2422 549 44197	Bead 220Ω at 100MHz
5723	2422 549 44197	Bead 220Ω at 100MHz
5724	2422 549 44197	Bead 220Ω at 100MHz
5725	2422 549 44197	Bead 220Ω at 100MHz
5726	2422 549 44197	Bead 220Ω at 100MHz
5727	2422 549 44197	Bead 220Ω at 100MHz
5728	2422 549 44197	Bead 220Ω at 100MHz
5729	2422 549 44197	Bead 220Ω at 100MHz
5730	2422 549 44197	Bead 220Ω at 100MHz
5731	2422 549 44197	Bead 220Ω at 100MHz
5941	2422 549 44197	Bead 220Ω at 100MHz
5942	2422 549 44197	Bead 220Ω at 100MHz
5943	3198 018 51080	1µH 10% 0603
5944	3198 018 51080	1µH 10% 0603
5961	4822 157 11778	5.6µH 0805 10%
5972	4822 157 11778	5.6µH 0805 10%

6001	4822 130 11397	BAS316
6002	4822 130 11525	1SS356
6102	5322 130 34337	BAV99
6150	9340 548 52115	PDZ5.1B
6151	9340 548 52115	PDZ5.1B
6152	9340 548 52115	PDZ5.1B
6153	9340 548 52115	PDZ5.1B
6154	9340 548 52115	PDZ5.1B
6401	4822 130 11397	BAS316
6402	4822 130 10837	UDZS8.2B
6403	4822 130 11148	UDZ4.7B
6404	9340 548 71115	PDZ33B
6405	4822 130 11397	BAS316
6406	5322 130 34337	BAV99
6407	9340 548 71115	PDZ33B
6408	4822 130 11397	BAS316
6411	3198 020 55680	BZX384-C5V6
6412	4822 130 11397	BAS316
6502	3198 010 10730	SS36
6941	4822 130 11397	BAS316

7000	4822 130 11155	PDTC114ET
7060	5322 130 60159	BC846B
7061	9352 723 71118	TDA9886T/V4
7103	9352 772 31125	74LVC1G3157GW
7104	9352 772 31125	74LVC1G3157GW
7105	9352 772 31125	74LVC1G3157GW
7106	5322 209 14481	HEF4053BT
7107	4822 209 73852	PMBT2369
7108	4822 130 60373	BC856B
7109	5322 130 60159	BC846B
7110	4822 130 11155	PDTC114ET
7111	4822 130 11155	PDTC114ET
7112	4822 130 11155	PDTC114ET
7113	4822 130 11155	PDTC114ET
7150	5322 130 60159	BC846B
7151	3198 010 42310	BC847BW
7201	9322 227 86671	M30620SPGP#U5C
7203	*9322 229 46685*	*BD45275G*
7205		For SW see item 0801
7300	*4822 130 11155*	*PDTC114ET*
7301	4822 130 11057	2N7002
7304	9965 000 04199	BSN20
7305	9965 000 04199	BSN20
7306		For SW see item 0802
7307	9322 219 66671	SI9011CLU
7401	*9352 681 65518*	*TDA9330N3*
7402	4822 130 60373	BC856B
7403	4822 130 60373	BC856B
7404	9965 000 04199	BSN20
7405	9965 000 04199	BSN20
7406	4822 130 10255	MUN2213
7500	9322 179 61668	LF80CPT
7502	9322 219 75685	FET SI2333DS-E3
7504	4822 130 11155	PDTC114ET
7505	9322 202 34668	L5973D
7506	4822 130 11155	PDTC114ET
7560	3198 010 42310	BC847BW
7601	9322 225 69671	AD9985AKSTZ-110
7635	4822 209 17398	LD1117DT33
7701	9322 235 50671	K4D263238I-UC50
7702	4822 209 17398	LD1117DT33
7703	9322 217 23668	LD1117DT25C
7704	9322 189 19668	LD1086D2T18
7721	9322 221 70671	SVPEX42
7907	9322 196 03702	MSP3411G-QI-B8V3
7908	9340 425 20115	BC847BS
7909	9340 425 20115	BC847BS
7910	9340 425 20115	BC847BS
7961	9352 703 94118	UDA1334BT/N2
7962	5322 209 14481	HEF4053BT
7963	4822 130 11155	PDTC114ET

Side I/O and Control Board [D]

Various

1010	4822 267 10748	Connector 3p
1011	4822 276 13775	Switch 1p 0.1A 12V
1012	4822 276 13775	Switch 1p 0.1A 12V
1013	4822 276 13775	Switch 1p 0.1A 12V
1014	4822 276 13775	Switch 1p 0.1A 12V
1016	3139 267 20481	Control Assy [E]
1232	2422 026 05701	Socket Phone 1p f
1250	2422 026 05742	Socket Cinch 3p
1251	2422 026 05494	Connector 7p f
1252	2422 025 12491	Connector 7p m
1254	2422 025 06353	Connector 5p m
1278	4822 267 10567	Connector 4p
8010	3139 131 06551	Cable 3p/560/3p Bk
8252	3139 131 07601	Cable 7p/560/7p Bk
8254	3139 131 06691	Cable 5p/560/5p Bk

2171	4822 126 14241	330pF 0603 50V
2172	4822 126 14241	330pF 0603 50V
2173	4822 126 14241	330pF 0603 50V
2174	4822 126 14241	330pF 0603 50V
2175	4822 124 22652	2.2µF 20% 50V
2176	4822 126 13881	470pF 5% 50V
2178	4822 126 13881	470pF 5% 50V
2180	4822 124 22652	2.2µF 20% 50V

3011	4822 051 30151	150Ω 5% 0.062W
3012	4822 051 30391	390Ω 5% 0.062W
3013	3198 021 31820	1.8kΩ 5% 0.062W 0603
3015	4822 117 12968	820Ω 5% 0.62W
3150	4822 117 12925	47kΩ 1% 0.063W 0603
3151	4822 051 30151	150Ω 5% 0.062W
3152	4822 117 12925	47kΩ 1% 0.063W 0603
3153	4822 051 30151	150Ω 5% 0.062W
3156	4822 117 12968	820Ω 5% 0.62W
3157	4822 117 12968	820Ω 5% 0.62W
3158	4822 051 30759	75Ω 5% 0.062W
4185	4822 051 30008	Jumper 0603
4186	4822 051 30008	Jumper 0603

6161	4822 130 11416	PDZ6.8B

CRT Panel [F]

Various

1317	4822 267 10837	Connector 5p
1335	3104 301 08281	Connector 1p
1351	4822 265 41113	Connector 7p
1354	2422 500 00004	Socket CRT 10p 32"
1354	2422 500 80087	Socket CRT 9p 29"
1361	2422 025 16382	Connector 3p m
1382	4822 267 10735	Connector 3p

2313	4822 124 12373	47µF 20% 250V
2319	4822 122 30043	10nF 80% 63V
2324	4822 121 70581	1.5nF 5% 2kV
2332	4822 126 13193	4.7nF 10% 63V
2333	3198 016 36810	680pF 25V 0603
2336	3198 017 33330	33nF 20% 16V 0603
2338	2022 318 00109	100nF 250V
2339	2022 318 00109	100nF 250V
2340	2022 318 00109	100nF 250V
2343	3198 016 36810	680pF 25V 0603
2344	4822 126 13193	4.7nF 10% 63V
2346	3198 017 33330	33nF 20% 16V 0603
2347	4822 124 80791	470µF 20% 16V
2348	3198 024 44730	47nF 50V 0603
2352	4822 126 13193	4.7nF 10% 63V
2353	3198 016 36810	680pF 25V 0603
2356	3198 017 33330	33nF 20% 16V 0603
2361	2238 586 59812	100nF 20% 50V 0603
2363	4822 124 40764	22µF 100V
2364	2020 557 90732	4.7nF 10% 250V
2365	4822 126 13193	4.7nF 10% 63V
2367	2238 586 59812	100nF 20% 50V 0603
2368	4822 124 40764	22µF 100V
2369	4822 126 14241	330pF 0603 50V
2370	2238 586 59812	100nF 20% 50V 0603
2371	4822 126 11663	12pF 5% 50V 0603
2372	4822 126 11663	12pF 5% 50V 0603
2373	4822 126 11663	12pF 5% 50V 0603
2375	3198 017 34730	47nF 16V 0603
2381	4822 124 40433	47µF 20% 25V
2382	4822 126 13193	4.7nF 10% 63V
2383	2238 930 11541	220pF 5% 200V
2384	2238 586 59812	100nF 20% 50V 0603
2385	2238 586 59812	100nF 20% 50V 0603
2386	3198 017 34730	47nF 16V 0603
2387	4822 126 14507	18pF 5% 50V 0603
2388	4822 126 13193	4.7nF 10% 63V
2389	2238 586 59812	100nF 20% 50V 0603
2390	4822 124 11947	10µF 20% 16V

3305	4822 052 10108	1Ω 5% 0.33W
3306	4822 052 10568	5.6Ω 5% 0.33W
3306	4822 052 11688	6Ω8 5% 0.5W
3307	4822 052 10568	5.6Ω 5% 0.33W
3307	4822 052 11338	3.3Ω 5% 0.5W
3317	4822 050 11002	1kΩ 1% 0.4W
3318	4822 052 10109	10Ω 5% 0.33W
3319	4822 051 30154	150kΩ 5% 0.062W
3320	4822 051 30223	22kΩ 5% 0.062W
3321	4822 051 30273	27kΩ 5% 0.062W
3322	4822 051 30154	150kΩ 5% 0.062W
3325	3198 021 31820	1.8kΩ 5% 0.062W 0603
3331	4822 116 52175	100Ω 5% 0.5W
3332	3198 013 04710	470Ω 20% 0.5W
3333	4822 116 52175	100Ω 5% 0.5W
3334	3198 013 04710	470Ω 20% 0.5W
3335	4822 116 52175	100Ω 5% 0.5W
3336	3198 013 04710	470Ω 20% 0.5W
3337	2322 242 13104	100kΩ 20W
3338	4822 051 30222	2.2kΩ 5% 0.062W
3339	4822 051 30272	2.7kΩ 5% 0.062W
3340	4822 051 30102	1kΩ 5% 0.062W
3341	2322 242 13104	100kΩ 20W
3342	4822 051 30272	2.7kΩ 5% 0.062W
3343	4822 051 30222	2.2kΩ 5% 0.062W
3344	4822 050 11002	1kΩ 1% 0.4W
3345	4822 050 23309	33Ω 1% 0.6W
3347	3198 013 01520	1.5kΩ 20% 0.5W
3348	4822 050 11002	1kΩ 1% 0.4W
3350	4822 116 52244	15kΩ 5% 0.5W
3351	2306 207 03151	150Ω 5% 0.5W
3352	2322 242 13104	100kΩ 20W
3353	4822 051 30222	2.2kΩ 5% 0.062W
3354	4822 051 30272	2.7kΩ 5% 0.062W
3355	4822 051 30102	1kΩ 5% 0.062W
3357	2122 552 00004	1mA 18V 0603
3359	4822 051 30682	6.8Ω 5% 0.062W
3360	4822 051 30221	220Ω 5% 0.062W
3361	4822 050 24701	4700Ω 1% 0.6W
3362	2120 108 94133	R Fuse 10Ω
3363	4822 051 30561	560Ω 5% 0.062W
3364	4822 051 20108	1Ω 5% 0.1W
3365	4822 051 30472	4.7Ω 5% 0.062W

3366	4822 051 30683	68kΩ 5% 0.062W
3367	4822 116 52297	68kΩ 5% 0.5W
3368	4822 051 30561	560Ω 5% 0.062W
3370	4822 051 20108	1Ω 5% 0.1W
3371	2312 915 11002	1kΩ 1% 0.5W
3372	2312 915 11002	1kΩ 1% 0.5W
3373	2322 257 41152	1.5kΩ 5W
3375	4822 051 30681	680Ω 5% 0.062W
3377	4822 051 30272	2.7kΩ 5% 0.062W
3378	4822 051 30221	220Ω 5% 0.062W
3380	4822 051 30222	2.2kΩ 5% 0.062W
3381	4822 051 30222	2.2kΩ 5% 0.062W
3385	4822 051 30681	680Ω 5% 0.062W
3389	2120 108 94132	1Ω 1206
3392	4822 051 30271	270Ω 5% 0.062W
3393	4822 051 30109	10Ω 5% 0.062W
3394	4822 051 30472	4.7Ω 5% 0.062W
3395	4822 116 52219	330Ω 5% 0.5W
3396	3198 021 31820	1.8kΩ 5% 0.062W 0603
3397	2122 552 00004	1mA 18V 0603
3998	4822 117 11817	1.2kΩ 1% 0.0625W
4303	4822 051 30008	Jumper 0603
4304	4822 051 30008	Jumper 0603
4305	4822 051 30008	Jumper 0603
4306	4822 051 30008	Jumper 0603
4307	4822 051 30008	Jumper 0603
4308	4822 051 30008	Jumper 0603
4309	4822 051 30008	Jumper 0603
4310	4822 051 20008	Jumper 0805
4321	4822 051 30008	Jumper 0603
4322	4822 051 20008	Jumper 0805
4330	4822 051 30008	Jumper 0603

5303	4822 157 11867	5.6µH 5%
5304	4822 526 10704	Bead 50 Ω at 100MHz
5308	4822 157 11867	5.6µH 5%
5339	4822 526 10704	Bead 50 Ω at 100MHz
5361	4822 157 11411	Bead 80Ω at 100MHz

6307	4822 130 11416	PDZ6.8B
6325	4822 130 10838	UDZ3.3B
6331	9322 197 45703	BAV21WS
6332	9322 197 45703	BAV21WS
6333	9322 197 45703	BAV21WS
6334	4822 130 10838	UDZ3.3B
6361	4822 130 11397	BAS316
6362	4822 130 11397	BAS316

7330	4822 209 33365	TDA6111Q/N4
7331	4822 130 60373	BC856B
7332	4822 130 41246	BC327-25
7333	4822 130 40981	BC337-25
7340	4822 209 33365	TDA6111Q/N4
7350	4822 209 33365	TDA6111Q/N4
7361	5322 130 60159	BC846B
7362	4822 130 60373	BC856B
7363	9322 195 05687	KTB631KY
7364	9322 195 14687	KTD600KY
7365	4822 130 60887	BF840
7366	9352 628 51112	TDA8941p/N1

Front Interface Panel [J]

Various

1060	3139 267 21641	Front Interf. Panel [J]
1211	2422 025 16268	Connector 2p m
1231	2422 128 03111	Switch
1505	2422 025 16268	Connector 2p m
1693	2422 025 10738	Connector 6p m
8505	3104 311 03011	Cable 2p/340/2p Bk
8693	3139 131 07121	Cable 6p/680/6p Bk

2691	4822 124 12379	220µF 25V
2692	3198 017 41050	1µF 10V 0603
2698	5322 121 42386	100nF 5% 63V

3500	4822 053 21335	3.3MΩ 5% 0.5W
3501	4822 053 21335	3.3MΩ 5% 0.5W
3691	4822 116 52283	4.7kΩ 5% 0.5W
3693	4822 116 83672	220Ω 5% 0.5W
3694	4822 116 52283	4.7kΩ 5% 0.5W
3696	4822 051 30154	150kΩ 5% 0.062W
4601	4822 051 30008	Jumper 0603

6691	9322 230 38682	LTL-102CBK5HCR
6692	9322 206 78667	TSOP34836UH1B
6693	9322 197 36682	LTR-301

IAP Board

Various

J1	Connector 3p m
J2	Connector 25p m
U1	Socket, DIP14
C1	10µF 16V
R1	2kΩ 5% 0805
R2	2kΩ 5% 0805
D1	1N4148
D2	1N4148
D3	1N4148
D4	1N4148
D5	1N4148
D6	1N4148
D7	1N4148
D8	1N4148
U1	SN74LS05, DIP14

11. Revision List

Manual xxxx xxx xxxx.0

- First release.